ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

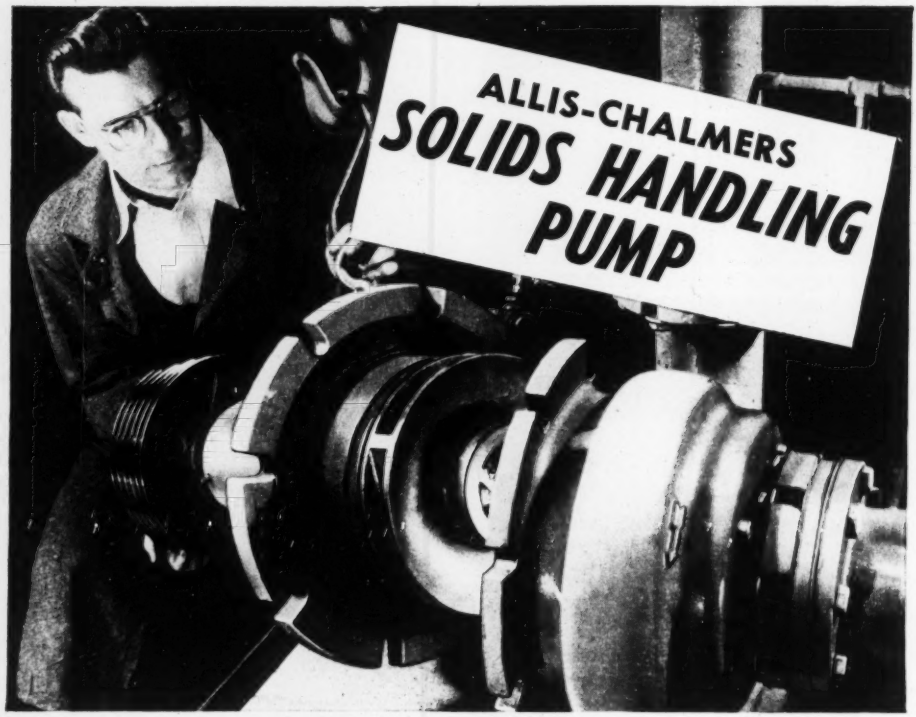
NOVEMBER 12, 1942

Army Base—U. of Washington Stadium, Seattle

QUERY BASES OF PAVEMENT

HOUSES GO UP FAST—COSTS GO

Only ½ Hour to Service!



ALL SOLIDS HANDLING PUMPS require periodic replacement of worn parts. This Allis-Chalmers "CW" pump saves you money because parts replacement is easy, fast and economical. The entire pump can be dismantled and reassembled in a half hour without disturbing piping.

Parts with varying rates of wear are separated. Only worn parts need be replaced. Three sets of bearings, brackets and shafts cover entire range of pump sizes . . . reducing parts inventories as much as 2/3!

USERS REPORT LONG WEAR

Experiences of operators prove that the combination of *Allisite*, an abrasion-resistant alloy, *heavier construction* and expert *application engineering* give the "CW" pump longer wear between servicings. Users say:

"Spent $300 a month for maintenance on previous pump. A-C solids handling pump has required only routine lubrication in nine months."

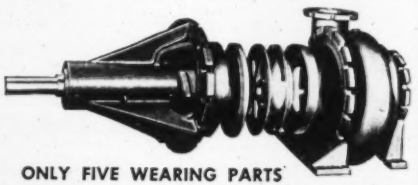
"A-C solids handling pump gives 350 hours service compared with 80 hours on best previous pump."

"Part needing most frequent replacement has approximately ten times the life of same part on previous pump at approximately same initial cost."

An A-C representative will be glad to give you additional facts and figures on possible savings for you. Or write for Bulletin 6381. A-2766

ALLIS-CHALMERS, 1018A SO. 70 ST.
MILWAUKEE, WIS.

Allisite is an Allis-Chalmers trademark.



ONLY FIVE WEARING PARTS

Shaft sleeve, impeller, casing, two wear plates. All easy to handle and easy to replace.

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

Less Infiltration

TRANSITE* SEWER PIPE offers two basic safeguards that minimize infiltration in sewer lines: *tighter* joints and *fewer* joints.

Transite's special sleeve-type joints make up tight and stay tight in service.
Its long 13-foot lengths reduce the number of joints in the system.

These safeguards cut down the volume usually allowed for infiltration, reducing sewage load on the treatment plant and conserving plant capacity for future needs. Where new treatment facilities are planned, this reduced infiltration may permit consideration of a smaller plant with resulting economies.

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Transite Sewer Pipe is made of asbestos, cement and silica by a special manufacturing process that employs steam curing to develop greater corrosion resistance and strength. It is available in four strength classes in sizes to 36", permitting selection of the pipe best suited to trench conditions, and frequently eliminating the need for concrete cradles.

For further details, write Johns-Manville, Box 290, New York 16, N. Y.

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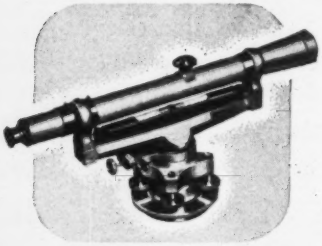
GUARANTEED *Lifetime* PRECISION



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Simple design, sturdy construction and skilled craftsmanship insure accuracy and dependability. Engineers the world over specify the Leupold Dumpy Level because they know there is no finer on the market...no detail in manufacturing has been overlooked to make this an engineers' precision instrument built for exacting work.

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- *Guaranteed not to wear or fret.*
- *Dustproof seal.*
- *Lifetime lubrication.*
- *Free movement in all temperatures.*

The Leupold Lifetime Guarantee means that when you buy a Leupold Dumpy Level, you buy a trouble-free precision instrument for life. A modern service and parts department assures you a minimum of lost time resulting from any accidental breakage of Leupold & Stevens Instruments.

Complete Line of Levels

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- LEUPOLD BUILDERS LEVEL
- LEUPOLD HAND LEVEL

Write for Literature on Complete Line of Leupold Products

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PORTLAND 13, OREGON

ENGINEERING NEWS-RECORD

VOLUME 143 NOVEMBER 17, 1949 NO. 20

WALDO G. BOWMAN
Editor

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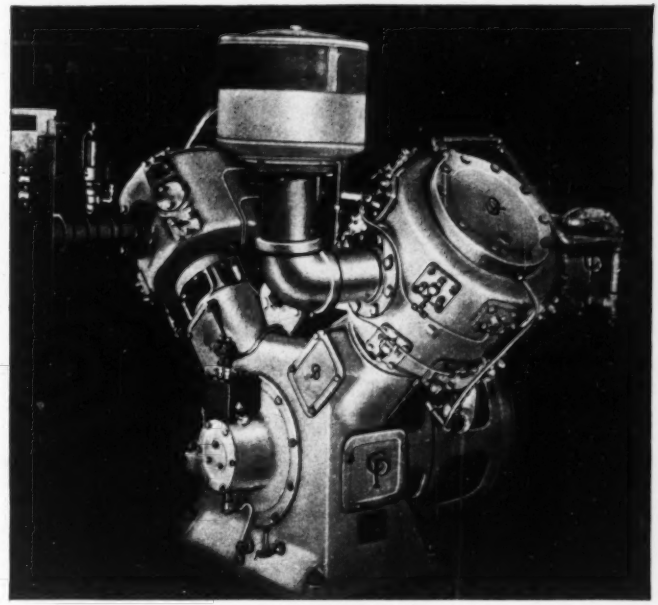

here's the answer to restricted floor space

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While its compact design makes it ideal for close quarter installation—it has plenty of other outstanding advantages.

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Available with built-in or direct-coupled motor, or with V-belt drive, in capacities of 500 to 900 c.f.m., at 80 to 125 pounds pressure. Sizes for other pressures also furnished.

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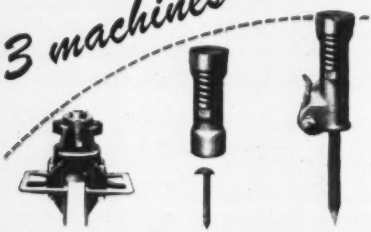

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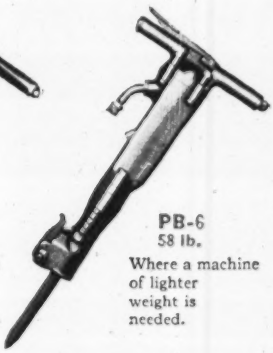

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58 lb.
Where a machine of lighter weight is needed.

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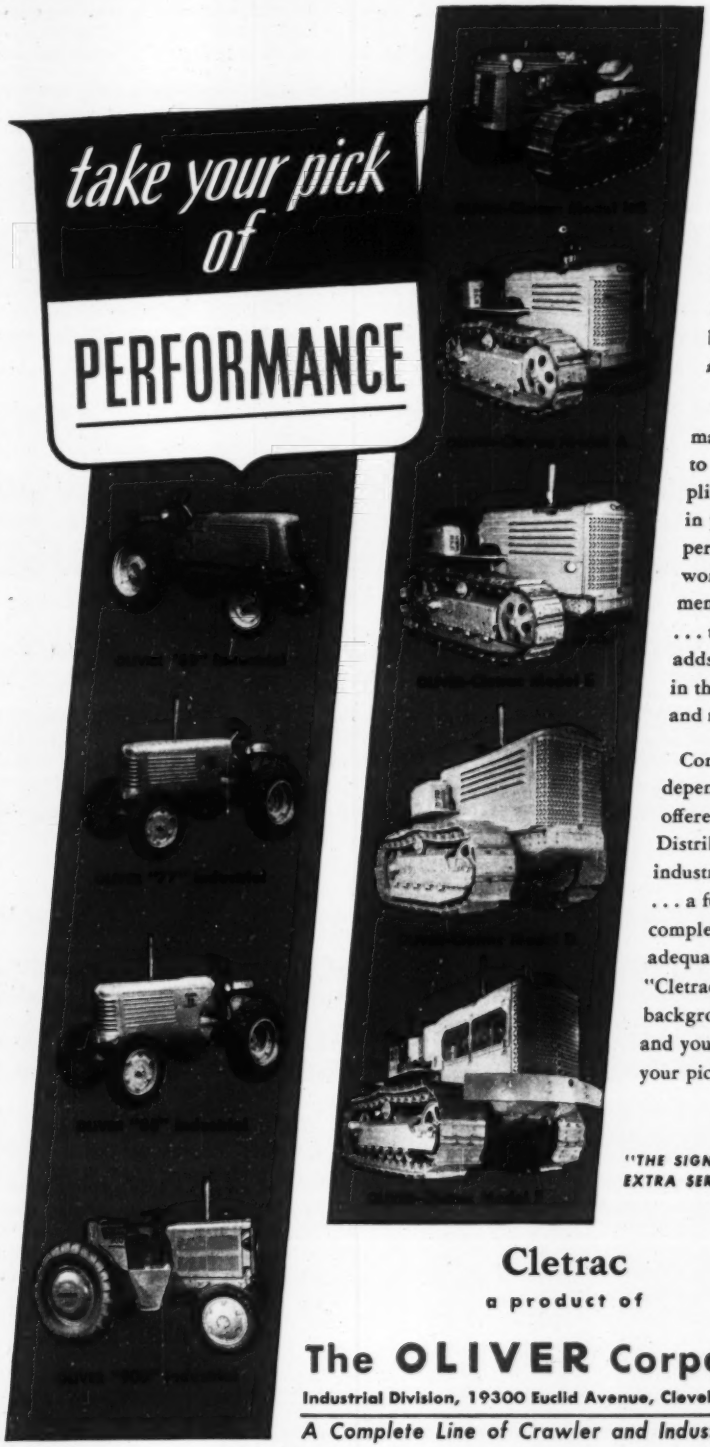

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"IN OPERATION 35 YEARS— COMPLETE SATISFACTION"

...says P. J. Scudder, Engineer, Shelbyville Water System

WATER BOARD
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Shelbyville Water System
SHELBYVILLE, TENNESSEE

December 2, 1948

Simplex Valve & Meter Co.
68th & Upland Sts.
Philadelphia 42, Pennsylvania

Attention Mr. R. A. McQuade

Dear Mr. McQuade:

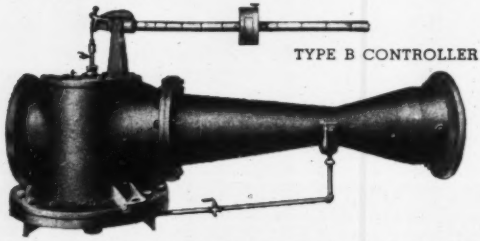
In 1915 the Shelbyville Water Company installed two of your Type B Rate Controllers, having a normal capacity of 500,000 gallons each. These controllers have been in operation for thirty-five years and have given complete satisfaction. Every ten years we have replaced the rubber diaphragm with a new one at a very simple repair cost. The controllers are in as good a condition now as they were when installed, and they have given no trouble whatsoever. We are in readiness to install two new filters at the present time which we would like to equip with Type B Rate Controllers if they are still available.

Yours very truly,

SHELBYVILLE WATER SYSTEM

P. J. Scudder, Engineer

PJS:de



TYPE B CONTROLLER

The Simplex Valve & Meter Company, Dept. 11, 6751 Upland Street, Philadelphia 42, Pa.

SIMPLEX

VALVE AND METER COMPANY

NEWS BRIEFS

First, Catch the Voter—It's going to cost the La Mesa (Cal.), Water District $25,000 to collect and ship back to the manufacturers about $240,000 worth of water pipe which had been delivered and lined up in the streets. Voters turned down the $500,000 bond issue on the basis of which District officials confidently had ordered the pipe.

State's Right—Georgia's Gov. Talmadge made a sale when he showed the U. S. Bureau of Roads his plan for all-weather, farm-to-market roads that could be built for $10,000 per mile, or less. Previously, BR officials had estimated the cost at $16,000 per mile. Talmadge, who campaigned on a "get the farmer out of the mud" platform, says the farmers need roads which are passable in any weather, not 4-lane speedways. Thus, he adds, they'll be willing to abide a few more curves and less speed.

Fast Work—It took about 14 weeks to get Public Housing Administration Approval for New York City's first project under the 1949 Housing Act. Breukelen Houses, a 1,600-unit apartment development in Brooklyn's Canarsie section, has that approval, and is the first project under a city-federal agreement covering the first two years of federal public housing, in which 20,300 New York apartments are to be built.

Tells the Story—Logically enough, the formal name for the new $15,000,000 bridge between Memphis and Arkansas, selected by unanimous vote of the Memphis and Arkansas Bridge Commission, is the "Memphis and Arkansas Bridge." The bridge (ENR Aug 18, p. 32), is to be opened about mid-January.

More Money, Please—Mississippi Valley people want more money for flood control—$100 million yearly, to be exact. Pointing out that river control plans have grown from "a $300 million project to a billion dollar project," the Mississippi Valley Flood Control Association wants annual appropriations henceforth to include $85,000,000 for construction, $15,000,000 for maintenance. Practically no major item of the program has been completed, the Association complained.

Push State Cement Plants—North Carolina's Advisory Budget Commission recommends a survey to deter-

(*Continued on page* 10)

You get better service wherever you see this sign

There's a *Macwhyte* Rope that's the *right* rope for your equipment. All job-proved — a thousand and one wire ropes to choose from.

Our distributors and mill depots — located at convenient points all over the country — carry stocks for immediate delivery. Ask a Macwhyte representative to recommend the rope best suited for your equipment.

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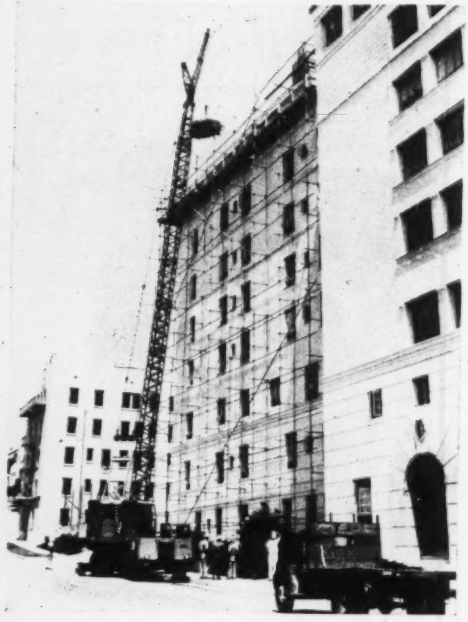
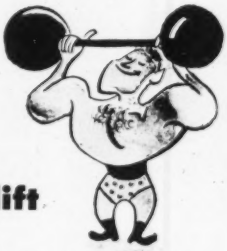
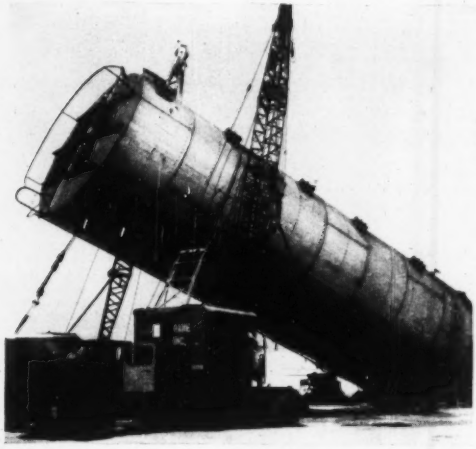


for a long reach



or for a heavy lift



ABOVE: High lifts made easy at the Queen of Angels Hospital, Los Angeles, with a CraneMobile, equipped with a 100′ boom and 30′ jib.

RIGHT: Two CraneMobiles setting a 40 ton grain storage tank for the Western Cutting Corporation. The two CraneMobiles handled the bulky 60′ x 20′ tank without difficulty.

Pacific Crane & Rigging, Inc.

of Los Angeles

Selects **BAY CITY CRANEMOBILE**

THIS PROGRESSIVE WEST COAST ORGANIZATION NOW OPERATES:

One Model 150 T40 . . . . . 12½ ton capacity
Two Model 180 T60's . . . . . 20 ton capacity
Two Model 190 T61's . . . . . 25 ton capacity

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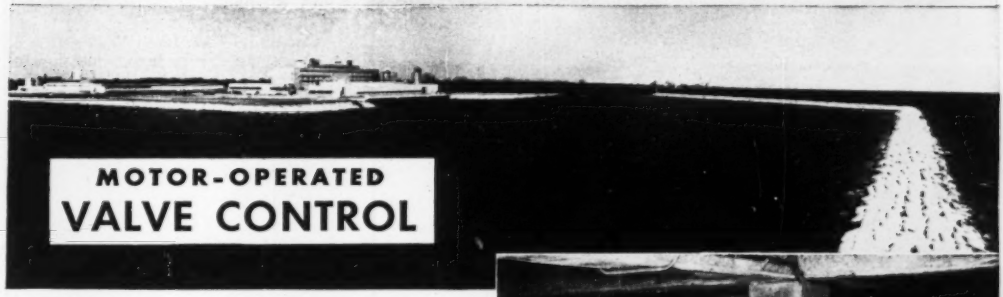
SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN See your nearest Bay City dealer for excavating and material handling equipment in sizes from ⅜ to 1¼ yard with crane ratings up to 25 tons. Both crawler and pneumatic tire mountings.

and now-a PORTABLE *Limitorque*



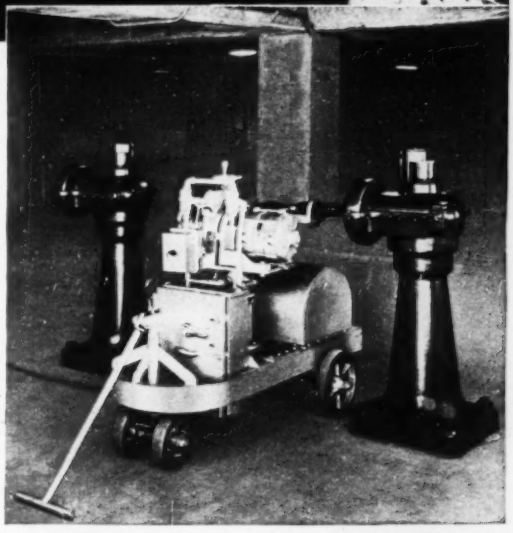
MOTOR-OPERATED
VALVE CONTROL

. . . at South District Filtration Plant, City of CHICAGO

Something new . . . here's the well-known and widely used *"Limitorque"* Motorized Valve Operator, in *Portable form,* adapted for use wherever a hand-drawn truck can be wheeled to a Valve or Sluice Gate location. — It may be quickly connected to a power outlet . . . and automatic *electric opening and closing is readily secured.*

This portable "Limitorque" is equipped with the famous *torque-limiting feature* (which operates in both Opening and Closing directions); *The limit switch* which may be set for any desired travel (automatic re-setting); *A Universal Joint connection* is also provided for compensation of misalignment between floorstand and power unit.

This unique method of electrical valve operation is *another first* for Philadelphia Gear Works. It embodies the salient and proven features that have made *Philadelphia "Limitorque" Valve Operators,* the most widely used in the world.



The *Portable "Limitorque"* shown directly above was built to the exacting specifications of the Filtration Division Engineers, City of Chicago, Ill. The photo at the top of the page shows a general view of the Filtration Plant taken from South Breakwater Light. (All photos courtesy of South District Filtration Plant at Chicago, Ill.).

Send for 96 page "Limitorque" Catalog and please use your Business Letterhead when requesting same.

Philadelphia Gear Works, INC.

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.

NEW YORK • PITTSBURGH • CHICAGO • HOUSTON

IN CANADA: WILLIAM AND J. G. GREEY LIMITED, TORONTO

Industrial Gears and Speed Reducers
LimiTorque Valve Controls

(Continued from page 6)

mine whether raw materials for Portland cement exist in the state. A legislative commission recently recommended the same thing (ENR Sept. 15, p. 26).

Correction—Col. Louis W. Prentiss is now a member of the commission in charge of the Falcon Dam Project (ENR Oct. 27, p. 32), replacing Col. Henry Hutchings Jr., who retired as Southwestern Division Engineer recently.

Aluminum Arch Completed—With the insertion of the crown sections of the arch ribs, the gap was closed in the aluminum-arch highway bridge being built for the city of Arvida, Quebec, over the Saguenay River by the Dominion Bridge Co., Ltd. (ENR June 23, p. 28). The parabolic arch spans 290 ft. with a rise of 47 ft. 6 in., and will carry a 24-ft. concrete roadway, plus two 4 ft., cantilevered sidewalks. Part of a 500-ft. long all-aluminum bridge, it was constructed by the cantilever method, the members being placed with the aid of a 516-ft. span cableway.

More Rubberized Roads—Massachusetts is the latest agency to experiment with rubber in highway construction. Two 1,000-ft. sections, in Wrentham and Concord, are to be tested through the winter. Officials are anxious to see how rubber-treated bituminous concrete will react to deep frost.

Slum Clearance Loans Limited—No overall plans for city development are eligible for federal financial assistance under slum clearance provisions of the 1949 Housing Act, Administrator Raymond M. Foley, of the Housing and Home Finance Agency, has warned. Assistance under that title can be given only to plans and surveys in preparation of slum clearance and urban redevelopment projects.

Alaska Housing Financed—Housing construction in Alaska now has the added stimulus of a $10,000,000 fund from which the Housing and Home Finance Agency may make loans to the Alaska Housing Authority. Some time ago, Federal Housing Administration mortgage financing provisions for Alaska were liberalized. Both moves are designed to ease the Territory's acute shortage of housing.

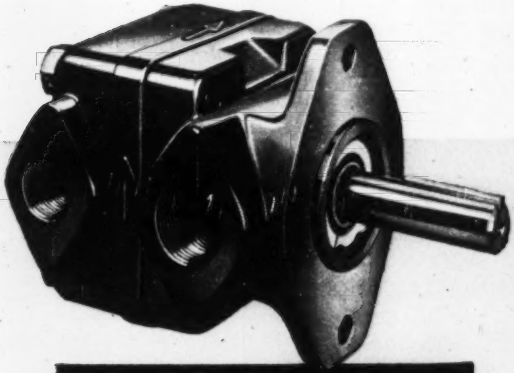
Pollution Hearings Limited—Only the industrial phase of Niagara River pollution will be considered during first hearings by the International Joint Commission at Buffalo next week. Municipalities will present their views at hearings next month or next year.

the pump designed SPECIFICALLY FOR mobile equipment service

the NEW series V-200

VICKERS

BALANCED VANE PUMP



THE ONLY PUMP THAT AUTOMATICALLY MAINTAINS CORRECT RADIAL AND LATERAL CLEARANCES AT ALL TIMES

The rigorous job requirements of construction, agricultural, automotive and materials handling machinery have long pointed out the need for a hydraulic pump expressly designed for this service. The new Vickers V-200 Balanced Vane Pump has been designed and developed to meet these requirements with the usual Vickers high quality workmanship . . . all adding up to the "Best Pump Value" for this industry.

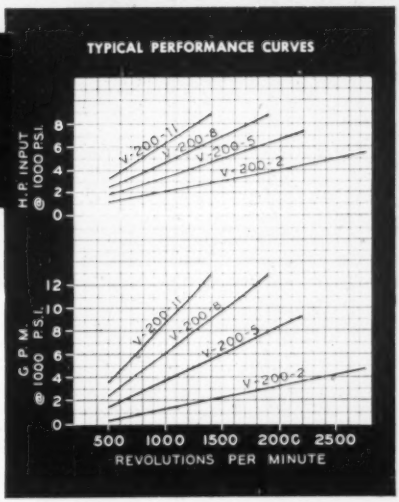
Longer life at maximum efficiency, far in excess of fixed clearance pumps, is assured as the Vickers Pump is the only pump designed to maintain both radial and lateral running clearances at all times. Not only is normal wear perfectly compensated, the pump even automatically adjusts its clearances to oil viscosity variations resulting from temperature change. As a result, correct clearances are maintained and more oil is delivered for useful work.

For many installations the nominal rated capacity of the pump is adequate, making it unnecessary to select the next larger size to provide additional capacity to compensate for loss due to high operating pressures, increased temperatures or normal wear. Thus, in many cases, a smaller pump can be used resulting in a more compact, efficient, and economical installation.

The tried and proven Vickers feature of "hydraulic balance" eliminates bearing loads resulting from pressure. The vane principle provides for no-load starting . . . important in cold weather cranking. Greater mounting adaptability is another advantage.

For better service, much longer life, with maximum efficiency all the way . . . you need Vickers V-200 Pump on your mobile equipment. Write for Bulletin 49-52.

AVAILABLE IN FOUR CAPACITIES WITH THE SAME EXTERIOR DIMENSIONS



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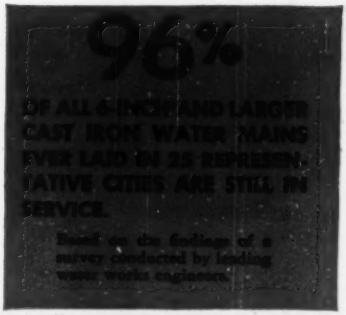
Installed "for keeps"

No community should have to take up, replace, and *pay twice for* a water distribution system. But it has been done! Whole systems, constructed with other kinds of pipe, have been dug up because of ruinous maintenance costs, and replaced with cast iron pipe.

Why should any community planning a public water supply system, or extensions to an existing system, contemplate such a risk? When it is well known that many cities in the United States and Canada have cast iron water mains in service that were installed over a century ago. And a survey conducted by eminent water works engineers shows that 96% of all six-inch and larger cast iron water mains *ever laid* in 25 representative cities are still in service. And reports from 195 water works superintendents show that the maintenance-cost of cast iron mains is little or nothing.

When you lay cast iron pipe, you lay it "for keeps"—and you pay for the pipe and the labor, *only once.* Cast Iron Pipe Research Association, Thomas F. Wolfe, Engineer, 122 South Michigan Ave., Chicago 3.


96%
OF ALL 6-INCH AND LARGER CAST IRON WATER MAINS EVER LAID IN 25 REPRESENTATIVE CITIES ARE STILL IN SERVICE.
Based on the findings of a survey conducted by leading water works engineers.

CAST IRON PIPE

—paid for but once!

SERVES FOR CENTURIES

Back-Slope

"D" ROADSTER used as finishing tool on sub-grade work by Rhoten & Frysinger "Does first-rate job" says C. W. Frysinger

ON 10-mile sub-grade for Ohio State Highway 30, in Crawford and Wyandot Counties, Rhoten and Frysinger Construction Co., of Columbus, had 178,000 yards of grading, ditching and back-sloping. While 3 veteran, Super C Tournapulls handled most of the heavy grading . . . hit of the job was a 25 m.p.h., self-loading D Roadster, which provided Rhoten and Frysinger with a new high-speed method of finishing the sub-grade, berms and back-slopes.

"Dodged" poles, culverts, trucks

Making thin cuts along 2:1, 3:1 and 4:1 slopes, the small, agile Roadster constantly had to maneuver around poles, culverts and bridge abutments . . . yet, it regularly self-loaded up to 5 pay yards of top soil, clay and silt in 1 minute's time. Loading distances on the shallow cuts varied from 100 to 150 feet.

LETOURNEAU LET EQUIPMENT

Mail now to: **R. G. LeTOURNEAU, Inc., Peoria, Illinois**

Please send ☐ specifications ☐ price ☐ job-performance reports on 100 h.p., 25 m.p.h. D ROADSTER

NAME..... TITLE.....

COMPANY.....

STREET..... CITY..... STATE.....

Type work to be handled:.....

Also interested in information on: ☐ 150 h.p., 13.5-yd. C TOURNAPULL ☐ 180 h.p., 19 m.p.h., rubber-tired Super C TOURNADOZER

SPECIALIST...

2400′ cycle every 5 minutes

It proved equally maneuverable on the haul roads, where rock and blacktop trucks were operating at the same time. In spite of loading obstacles and traffic delays, this mobile, one-man rig averaged a load every 5 minutes on 2400′ round-trip haul. Consistent Roadster production on finishing of the 10-mile sub-grade drew high praise from C. W. Frysinger, partner, who reported "It does a first-rate job."

Finished 3½ miles in 13 days

Rhoten and Frysinger used this same D Roadster as a finishing tool on another sub-grade job near Findlay, Ohio, where it handled 3½ miles of berm side ditches and back slopes in 13 working days. They also take additional advantage of the rubber-tired "D's" speed and mobility by driving it over the highways from job to job. It runs anywhere at 25 m.p.h. To check further what this 100 h.p., electric-control Roadster can do for you and your profits, write or call your nearest LeTourneau Distributor. He is ready to show you what the job-proved "D" can do on your work. Ask him for facts and figures TODAY.

Tournapull, Tournadozer-Trademark Reg. U. S. Pat. Off. R169

LETOURNEAU JOB-PROVED **TOURNAPULLS**

MORE WORK PER HOUR WITH RUBBER-TIRED POWER

Contractor trims $19,000 on a single bid

The successful bidder on more than 22 miles of highway sub-drainage for an Eastern State figured the job two ways. First, he bid the job with short section, rigid pipe. Then by figuring an alternate bid using ARMCO Corrugated Metal Pipe he was able to reduce his original estimate by more than $19,000.

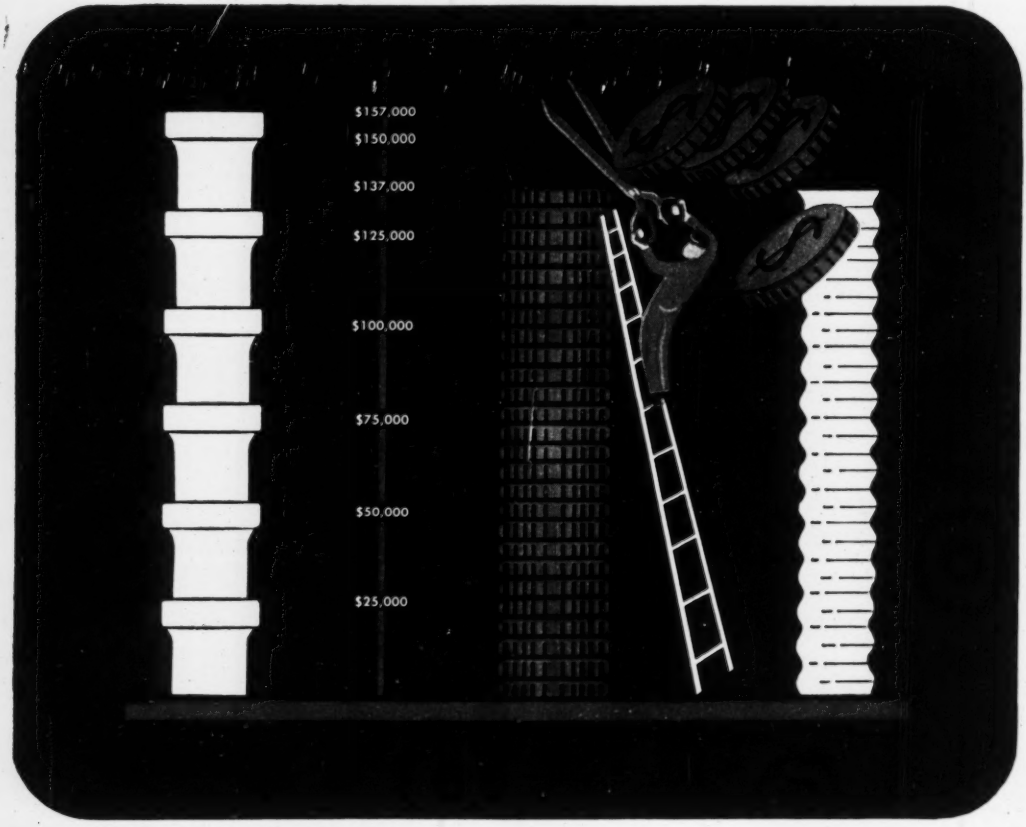
No wonder more and more experienced contractors are being awarded desirable contracts with bids based on ARMCO Corrugated Metal Pipe. Figured on an ***installed*** basis, this pipe saves money in many ways.

Although amply strong, ARMCO Pipe often weighs only one-tenth as much as more massive types. This means low handling and hauling costs. Job costs go down because unskilled labor quickly makes the installation. There is no breakage, no curing, no delay.

Individual lengths of ARMCO Pipe are supplied in any length that can be hauled or handled. No large and expensive equipment is needed for installation. A few men with a rope sling or a small A-frame can handle the largest structure. Connections are made with simple band couplers and there are no bells or massive joints requiring hand excavation.

Bid low with adequate profit by figuring that next job with ARMCO Corrugated Metal Pipe. You will find it ideal for highway, railway, airport and municipal installations. Write for complete data. Armco Drainage & Metal Products, Inc., 2835 Curtis Street, Middletown, Ohio. Subsidiary Of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES



THE CONSTRUCTION WEEK

WHITE HOUSE SIDELIGHT—Before John McShain won the contract to rebuild the White House (ENR Nov. 3, p. 15) he had some anxious moments. So did the commission of eminent engineers and architects appointed to master-mind the job. Six months ago, after considering nearly a hundred contractors, the commission selected McShain to do the work on a cost-plus basis. It is also rumored that Spencer, White & Prentis was the favored sub for the wall underpinning.

Subsequent political rumblings and Congressional discussions, however, convinced the commission that competitive bids for the fee on the $5-million dollar job would be more advisable. Recognizing the prestige value of such a job, and fearing some $1 token bids, the commission required that the fee cover the general contractor's tools and overhead as well as profit. From a list of 43 firms who had expressed an interest in the work the commission invited 15 to bid. McShain had figured his bid at $125,000, and was eager to get the job—especially after having been chosen previously as the favorite. On a hunch, just before the bid opening, McShain reduced his offer to $100,000. It was a good hunch: James King & Son's bid turned out to be $117,000. According to the average judgment of the bidders, as expressed in their bids, somewhere between $250,000 and $300,000, would be required to cover costs and a small profit.

DOUBLE BUDGET?—One Federal budget for "housekeeping" expenses, and one for "capital" outlay is being talked up around Washington. The argument is that between $3 and $6 billion of today's budget goes for projects, or as loans, which (at least theoretically) will be repaid over the years. Examples: Export-Import Bank loans, Reclamation Bureau projects. Proponents long have urged that these repayables be taken out of the picture of government's running expenses. They argue that a truer picture of government expenses could be obtained, and that repayable projects could then be passed upon for their economic value, rather than in terms of impact on annual government spending. Opponents regard the proposal merely as a scheme to camouflage the size of deficits between tax revenues and spending.

WAY OUT?—What might prove a way out—and a great bonanza for the Lustron Corp. (recently hip-deep in Congressional questions about money lent it by RFC and lagging production) appeared in the New York area. The U. S. First Army announced it had recommended acceptance of two contracts to provide housing for Army personnel at Ft. Dix, N. J. The contracts are in two parts, calling for 600 units to cost about $5,400,000, all under the new Wherry Act that permits private builders to do work on U. S. property, with FHA or RFC backing. Kicker is that half of the contract calls for 300 Lustron homes (at $9,000 each)—and that's the half that RFC must approve finally. And RFC has a good many millions—$37,500,000 to be exact—invested in Lustron. First Army's recommendation must be approved by the Department of Defense before RFC gets to it, however.

PRICING SETTLEMENT?—The steel industry—which went to f.o.b. mill pricing when the Supreme court handed down its landmark decision against basing points in the Cement Institute case, has reached a tentative agreement with the Federal Trade Commission that may settle—for the time being—the battle over legality of delivered pricing. The agreement would: Give buyers an option of buying at f.o.b. mill, or delivered prices; permit steelmen to absorb freight, except where effect is to lessen competition unlawfully; prohibit steel producers from using common freight books in figuring their delivered prices; keep the producers from agreeing on charges made either for base products or for extras. This may meet U. S. objections, give customers a better deal.

PEACE, IT'S WONDERFUL—Fitted out with a brand-new name, the Construction Industry Manufacturers' Association (formerly the Construction Industries Association)—the ARBA manufacturers' division—has made its peace with ARBA, and has agreed to participate in another road show.

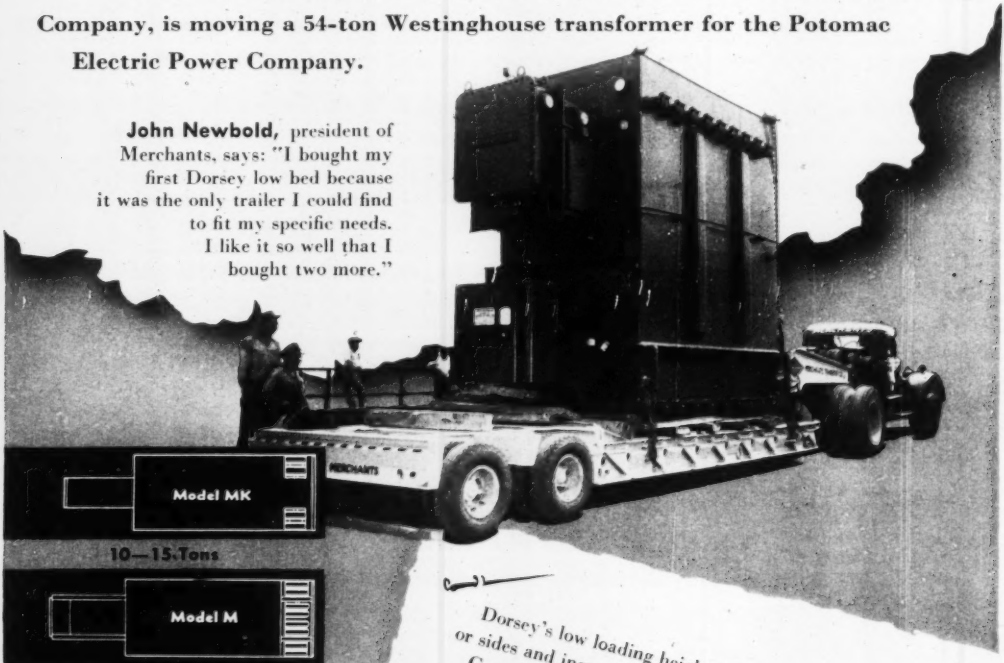
The next show will be part of the centennial celebration of the American Society of Civil Engineers, and is scheduled for September, 1952, in Chicago. CIMA feuded briefly with ARBA over payment of dues and other matters—including management of the road shows—but has now agreed to continue as the manufacturer's division of ARBA, and to give ARBA financial support. Example of peacemaking: ARBA will arrange for CIMA participation in the 1952 show, and will administer the details—with CIMA advice and approval; CIMA will collect dues from its manufacturer members for ARBA.

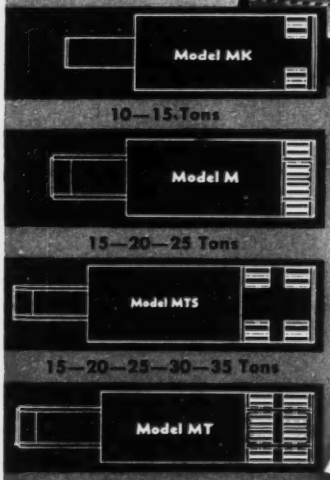
DORSEY Low Bed Trailers

Make the Heavy Jobs Light

IN WASHINGTON, D. C., this Dorsey MT-60 Drop Deck Machinery Trailer, operated by Merchants Transfer and Storage Company, is moving a 54-ton Westinghouse transformer for the Potomac Electric Power Company.

John Newbold, president of Merchants, says: "I bought my first Dorsey low bed because it was the only trailer I could find to fit my specific needs. I like it so well that I bought two more."





Dorsey's low loading height simplifies loading from rear or sides and increases stability of top-heavy loads.

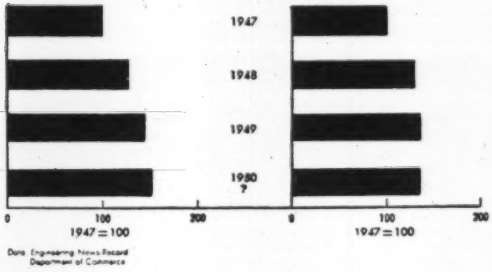
Conservative capacity ratings and oversize tires provide a wide safety margin for heavy loads . . . tire changing is simple because there is no side skirting around wheels . . . large braking areas add to the efficiency of powerfully actuated brakes.

Your Dorsey distributor will give you proof of Dorsey's safe, economical road performance . . . will explain in detail the special construction features that give you the trailer you want for any job at a *new low price.*

DORSEY TRAILERS, INC. • ELBA, ALABAMA

CONSTRUCTION TRENDS

HEAVY CONSTRUCTION OUTRUNS TOTAL CONSTRUCTION
(Indexes of Dollar Volume 1947 = 100)



Data: Engineering News-Record
Department of Commerce

Construction—particularly heavy construction—is booming this year.

And in 1950—as the prospects shape up—construction will have another very good year.

As the chart above shows, heavy construction has gained faster than has total construction in the last three years. Volume of contracts awards reported to ENR has jumped 45% since 1947, while total new construction, as estimated by the Department of Commerce, has gained 36%.

The prospect is that this shift will continue next year. Public work generally is rising, and almost all of it is engineered construction. Moreover, the sharpest gains in housing have been in large-scale projects, public and private. This trend will gain speed next year, which increases the shift toward heavy construction.

● NEW PEAKS IN '49 will make a record year for heavy construction. Currently, even after a drop in the last two months, contract awards reported to ENR are running 16% ahead of last year. For 1949 as a whole, they promise to top $8 billion.

Homebuilders, too, are headed for a record year. Mass housing projects—those costing $250,000 or more—are running 29% ahead of 1948 by ENR's tally. The total of all new permanent nonfarm homes started this year promises to run to about 950,000.

All new construction—as measured in dollar volume by the United States' Department of Commerce—promises to reach more than $19 billion this year. Booming homebuilding and heavy construction are raising the dollar figures for total new construction well above the forecasts made early this year.

● LOOKING AHEAD TO 1950—which way will construction go? Outstanding in the prospect is another gain in public works. While public construction has risen almost 30% this year, private work—at least as it is measured in total by the Department of Commerce—dropped. The gain in public work, however, is raising total construction to a new high.

Public construction is expected to gain more next year. From about $5.2 billion this year, it may go to $5.8 billion or more, next year.

Part of this gain in public works will come in the new federal housing program. The program promises to see 80,000 units started. That gain in public housing will offset a good part of any decline in private homebuilding.

It is early yet to make precise estimates of other classes of building. ENGINEERING NEWS-RECORD will do that as part of its year-end review and outlook.

But, briefly, the prospects add up this way:

Industrial building—plants for the manufacturing and mining industries—should gain next year. Off sharply this year from last, it seems to be turning upward now and will probably gain moderately next year.

Public utilities—they are expected to taper off slightly from their 1949 peak at about $3.5 billion. But next year's utility construction program is expected to be only slightly smaller than this year's.

Commercial building—warehouses, lofts, store buildings, and such—lagged behind expectations this year. To keep up with the rush of new homes, however, it should turn up next year.

Churches, schools, hospitals and other private nonresidential building have boomed this year, may well run on next year at the same level, or even gain slightly.

The rising volume of public works is likely to keep the physical volume of all types of construction about as high as it is this year.

● WHAT HAPPENS TO CONSTRUCTION COSTS, however, will have an important bearing. After falling last winter and spring, costs levelled off and even turned upward slightly this fall. That encouraged customers who had been holding off, waiting for the cost picture to clear, to come into the market. Both homebuilding and heavier construction surged in mid-year.

Next spring is likely to see customers hesitate again. Then, if the industry can cut selling prices again by, say, 5%, the prospects are that 1950 volume will be very close to this year's record. A 5% cut in prices seems well within reach since productivity on many jobs apparently is not yet back to prewar standards.

With a 5% cut in prices—and barring general economic calamities that would seriously slow down all business—1950 promises to be another construction year as good as 1949.

For OUT-SIDING...IN-SIDING...and CEILING, too

K&M "Century" APAC filled the bill

The total bill for the job was held down by the K&M APAC Asbestos-Cement sheets used for all walls and the ceiling of this serviceable structure. And no bill for APAC maintenance is ever even likely. The same sort of economy goes with K&M APAC on any project. Enclosure is quicker because APAC sections—large, strong, but not bulky—are easy to handle. Permanence is as certain as it can be made by a material that defies weather and fire, rust and rot, rodents and termites.

The K&M APAC Asbestos-Cement formula gives you a tough, attractive, money-saving material for panels, partitions, sheathing, shaft casings, bins—all flat areas. Apply APAC over insulation board, wood studs, solid wood sheathing, steel or wood girts. You don't even need to paint APAC! Standard thicknesses: $\frac{3}{16}$"—$\frac{1}{4}$"—$\frac{3}{8}$"...Standard sheet size—easy to cut on the job—is 4' x 8'. For name of your nearest distributor, and all particulars, write to us.

Nature made Asbestos...
Keasbey & Mattison has made it serve mankind since 1873

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

Designed and constructed by Unistrut Corporation, Wayne, Michigan.
Exterior: K&M APAC. *Interior:* K&M APAC. *Ceiling:* K&M APAC.

The Future of the BOCA Code

Approval of the Basic Building Code by the membership of the Building Officials Conference of America marks the completion of the first step in that group's plan for establishment of uniform building regulations in the United States (ENR Nov. 10, p. 32). The need for such regulations has long been apparent. Much credit, therefore, is due the BOCA for working toward this goal and for formulating a document that may well serve as a model code throughout the nation.

The next steps planned by the BOCA include making provisions for keeping the code up to date and promoting its adoption by communities. These two steps are not unrelated: In most localities, approval of local architects, engineers, contractors, labor unions and building material manufacturers and suppliers, as well as that of the local building official, will have to be obtained before a new code is adopted. These men may not regard favorably any regulations in the formulation of which they did not participate or in the changing of which they have little or nothing to say.

It appears, therefore, that if the BOCA is to be successful in its promotional efforts, at the very least it will have to give all segments of the building industry a real voice in initiating and approving changes that will be needed to keep the code up to date. By the same token, it behooves technical societies and trade associations who profess interest in building code matters to cooperate with the BOCA at every opportunity.

Engineer Status in the Army

When congress reconvenes, important grist for its legislative mill will be a plan for reorganizing the Department of the Army. And the plan which Congress now has, embodied in bills HR5794 and S2334, is not one to merit the approval of engineers either within or without the Army.

By omitting any statutory basis for the technical services, including the Corps of Engineers, Signal Corps, Transportation Corps, Sanitary Corps or the Chemical Warfare Service, the reorganization plan opens the way for the assignment of officers trained and skilled in those specialties to any kind of duty, and for non-technical officers to be put in positions of technical command. The Army officers who drafted the bills—obviously not representatives of any of the technical services—defend such a set-up on the ground that it provides necessary flexibility in organization. They overlook, or willfully disregard, the fact that such flexibility can only be gained at the expense of technical competence. With no premium on professional ability and no assurance that technical skill will be recognized or used effectively, competent engineers will not be attracted to the Army either as regulars or reserves.

The medical, legal and chaplain corps are recognized in the proposed legislation, and given a standing of "special branches." The same standing should be accorded those other existing corps responsible for the the civil, electrical, chemical and other engineering tasks so vital to a modern army. If anything, present Army technical personnel needs encouragement to become better trained in engineering rather than having their incentives and opportunities taken away from them. As one civilian put it, "What the Army needs is more M.I.T. graduates, not more with diplomas from Ft. Belvoir, however necessary the latter may be as evidence of supplementary training."

These new bills would leave the Army's engineers without professional standing. They would remove any incentive for technical education or achievement. They should be amended to give the various technical corps the status of special branches and to require Army engineer qualifications equivalent to those of civilian engineers in positions of comparable authority and trust. Anything less will weaken the Army rather than strengthen it.

Checking Highway Damage

The american association of state highway officials, at its meeting in San Antonio, adopted a resolution calling for a "vigorous, fearless, and sustained" program of enforcement of existing restrictions on highway loadings. At almost the same time, H. D. Horton, president of the American Trucking Associations, Inc., was telling his organization that "this industry must dedicate itself to a vigorous, nation-wide program of self-policing. We need to be over-scrupulous about obedience to weight laws."

Mr. Horton's statement would make it appear that truck operators are in sympathy with the objective of the AASHO, which is to protect our present highways from damage and destruction due to overloaded trucks. At the top, we believe that they are. The big truck operators see the wisdom of checking the destruction of old pavement by overloading. Where most of the trouble lies is with the small truckers, who probably are not members of the ATA. Operators of local stone quarries and gravel pits are notable offenders in some areas.

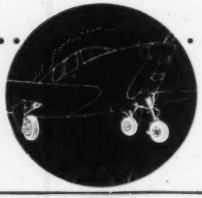
State highway departments will welcome the vigorous self-policing that Mr. Horton advocates. It will help materially. But it will not be fully effective unless the associations represented by Mr. Horton find some way to reach every truck operator who uses the public highways, not just their own members.

Let's look at Beechcraft advantages from the owner's viewpoint

BONANZA

You want speed . . .

The Beechcraft Bonanza cruises at 170 miles per hour at 8,000 feet, using only 56% of engine's maximum rated take-off power. *No engine overload.* Top speed of 184 miles per hour at sea level. (Bonanza performance figures guaranteed.)



. . . but you want strength and ruggedness, too.

See how well the ship handles on short, rough fields. See that low, sturdy landing gear with wide tread and struts exclusively cross-braced. No pitching — because of nose gear position and long wheel base. Allows greater braking.

You want high performance

Your Beechcraft Bonanza has a range of 750 miles, a service ceiling of 17,100 feet. You get the extra speed with an extra margin of safety. Carries four people and more than 135 pounds of baggage.

. . . but you want economy, too.

Beechcraft Bonanza fuel consumption amounts to only 9½ gallons per hour at cruising speed. Because of lack of engine overload, there's less engine wear. Seat-mile cost reaches as low as 1¼ cents. Real savings!

You want safety . . .

Tough, sturdy framework gives you safety "plusses." Rated in *utility* category at *full gross weight*, with a limit flight load factor of 4.4 G's, the Beechcraft A35 Bonanza underwent radio controlled dive tests at 275 miles per hour, pulling out safely at 3 G's.

. . . but you want beauty and comfort, too.

Exclusive retractable step and limousine door let you enter and leave with ease; preserve feminine dignity! Room to spare for four in the handsome, *sound-proofed* cabin. Maximum 5-way visibility.

Add up all these features—and you have the reasons why the revolutionary Beechcraft Bonanza is a better buy. *See* it today! A note on your company letterhead will bring illustrated brochures describing the Beechcraft Bonanza's many *extra* advantages. Write to Beech Aircraft Corporation, Wichita, Kansas.

Compare these performance features

- Top speed, 184 mph
- Cruising speed, 170 mph
- Range, 750 miles
- Service ceiling, 17,100 feet
- Fuel economy, 9½ gal. per hour

Compare these comfort features

- Exclusive retractable step
- Limousine entrance
- Insulated, sound-proofed cabin
- Quickly removable rear seat
- Luggage compartment accessible two ways

Beechcraft

BONANZA MODEL A35

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

ENGINEERING NEWS-RECORD

NOVEMBER 17, 1949 VOL. 143 NO. 20

Campaign gathers strength to broaden Reclamation Act

National Reclamation Association hears Truman aides emphasize necessity of re-examining factors governing feasibility of land, water projects—Group urges liberalization

Western water and land development interests were speculating this week as to the scope and pattern of the new reclamation law which numerous parties are proposing.

Highlight of the National Reclamation Association convention at Salt Lake City early this month was the disclosure that President Truman "now has under consideration a special commission" to make "a new appraisal and fresh examination of basic policies and assumptions on which our water policy is built."

Straus urges change

Disclosure of the President's interest wasn't the only indication of a legislative drive to revamp existing reclamation law. Commissioner Michael Straus, of the Reclamation Bureau, emphasized in his address that the "1902 model chassis" of the Reclamation Act has been completely outgrown.

And the association approved a resolution recommending liberalization of the 1902 basic act.

Elmer B. Staats, executive assistant to the U. S. Budget Bureau director, carried the administration's revision message to NRA's 18th annual meeting. Staats noted the President's concern with budgeting of recent water project proposals. He called attention to Presidential messages concerning Utah's Weber Basin project, the Colorado-Big Thompson and New Mexico's Ft. Sumner-Vermejo projects. These messages cited the need for development of clear-cut principles on:

Cost allocations for recreational and fish and wild-life benefits.

Repayment periods on reimbursable costs.

Rehabilitation of non-federal projects.

Modification of acreage limitations.

"The President faces few more difficult tasks than in developing a balanced program for conserving and improving our natural resources," Staats asserted. "The size and scope of activities today underscore the need for carefully inter-relating desirable programs, undertaking them in logical sequence. . . There is little question there is a pressing need for a new appraisal and fresh examination of basic policies and assumptions on which our water policy is built.

"The suggestion has been made in many quarters that a commission or similar group be established to make a survey. The President now has under consideration a special commission with this objective in mind. . . (It) would recommend general standards for determining the amount and type of federal undertaking in land and water resources projects, the extent to which investment in such projects should be reimbursable, recommendations to end inconsistencies. . . ."

(Ed. Note—At the convention's end, there came from Washington the news that a "capital" budget is being talked of again in official circles This proposal would divide annual federal outlays into a "housekeeping" budget for ordinary expenses of government and a "capital" budget to cover expenditures which are for long-term improvements, much of them to be repaid eventually. Reclamation projects would be financed from such a "capital" budget. See page 17).

Straus, refusing to be drawn into the attack on valley authorities which marked the meeting, warned that many contemplated western projects will be unable to pass feasibility tests unless repayment terms are liberalized and non-reimbursable features expanded.

In any revised reclamation law, Straus said, such matters as silt control, recreation, fish and game conservation and national defense might be recognized as non-reimbursable items. These have been so recognized in other, non-reclamation legislation, he pointed out.

In addition to recommending liberalization of the 1902 act, the meeting passed these other resolutions touching upon the problem:

1. Favoring Congressional action to permit federal financing of non-reim-

(*Continued on following page*)

Appoint O. L. Chapman as Interior chief

The long-expected promotion of Oscar L. Chapman as Secretary of the Interior last week may mean more in terms of politics than policy.

Former Secretary J. A. Krug, 42, a native of Madison, Wis., who had a meteoric rise to the cabinet post he occupied for three years, suddenly announced his resignation last week. He did it by the somewhat unorthodox procedure of sending his resignation letter to the President, and then calling in the press before the President had received notification.

Chapman—not Krug—carried Interior's ball in the 1948 campaign, and the new shift is seen by insiders as strengthening Mr. Truman's "Fair Deal" lineup in the cabinet.

Assistant Secretary of the Interior under Harold Ickes for 13 years, and undersecretary since 1946 under Krug, Chapman has played an important role in making Interior policy—and in picking its personnel—since the early days of the New Deal. Thus, he probably means it when he promises no major changes in either aims or personnel of the department under his new regime.

From his frequent speeches, and statements of his views upon being named to the new post, Mr. Chapman, as secretary, will probably press for a Columbia River Valley Authority, statehood for the Territories of Alaska and Hawaii, continued development in the West and more research and development in the field of natural resources.

A 52-year-old lawyer, Chapman is a native of Virginia who moved to Colorado for his health about 30 years ago. He joins Agriculture Secretary Brannan as the second Denver resident now in the Cabinet.

bursable items on private or state-sponsored projects.

2. Favoring permission for USBR to finance culinary water supplies as part of a project.

3. Favoring a study commission to plan future basin-wide developments which would have equal local and federal representation.

Unable to agree on a change in acreage limitations, delegates tabled a resolution affecting this matter. But they urged repeal or modification of the existing 160-acre limitation where necessary to meet today's conditions. Six states voted against tabling.

Aside from law revision, the convention:

Refrained from bringing to the convention floor the long-standing dispute between coast and inland rivals for Colorado River water.

Heard Sen. Joseph C. O'Mahoney, Wyoming Democrat, and Nebraska's Gov. Val Peterson criticize the valley authority concept as a tool for western water and land development.

Received warning from President Harry E. Polk that, while obtaining the greatest possible power development on western water projects, NRA "should exercise great care lest, under a mistaken concept of evaluating aids to irrigation, we foster autocratic powers in government which, under some other name such as 'valley authority', we contend against."

Re-elected Polk as president; Clifford H. Stone, Colorado, first vice-president; J. E. Sturrock, Texas, second-vice-president; and William E. Welsh, Washington, D. C., secretary-manager.

Selected Spokane for next year's convention.

Push plan for Columbia fisheries preservation

A plan for reconciliation of the perennially opposed power and fisheries interests in the Pacific Northwest is before the Columbia Basin Interagency Committee.

Submitted by fishing authorities of Washington, Oregon and Idaho, the plan would:

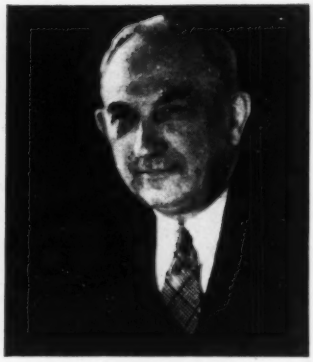
1. Complete all dam projects now underway before starting new ones.

2. Complete Chief Joseph Dam, on the Columbia, and all dams above it, before undertaking further lower-river dams.

3. Complete Hell's Canyon Dam on the Snake at an early date.

4. Postpone construction of the four proposed lower Snake dams and Priest Rapids, John Day and The Dalles dams on the lower Columbia until there is proof they are needed.

Herbert Hoover



Richard E. Dougherty

FORMER PRESIDENT, RAILROAD EXECUTIVE, GET MOLES' AWARDS

For their "outstanding contributions to construction and for their exemplary careers as citizens," these men will be honored at The Moles annual award dinner next Feb. 9. Immediate incentive for honoring the former President is his work on the Hoover Commission, but beyond that lay his "tireless and courageous advancement of the American tradition." Citing Dougherty, Moles President Carlton S. Proctor praised the retired vice-president and chief engineer of the New York Central Railroad for his "special contributions to both railroading and civil engineering in America." Awards were announced at a Moles dinner at New York Nov. 10.

5. Maintain the existing schedule for lower river fisheries rehabilitation, calling for expenditures of $20,000,000 in 10 years.

Fisheries spokesmen said past river development has ruined more than 75 percent of the Columbia's spawning grounds, and that less than 10 percent of them will remain if all proposed dams are built.

THE COVER

The University of Washington's new $9,000,000 Health Science building, is the newest unit in the school's large-scale expansion and reconstruction program.

Far from the classic lines of U. S. university construction, the new building has eight wings projecting from a central corridor five stories high (a ninth wing may be added in the future). Vertical columns and exterior walls carry all the weight of the building, making it possible to move partitions as the needs of the various departments may indicate.

The structure contains a 600-seat main auditorium, a pathology amphitheater, a dental operatory, and other facilities. Plans have been put underway for a $10,000,000 hospital, to be built at the left of the structure.

John Paul Jones is supervising architect for the university, while Naramore, Bain, Brady and Johanson prepared plans. J. C. Boespflug Construction Co. held the general construction contract.

N. C. gives road work to Teer despite his suit

A contractor who is suing the North Carolina Highway Commission over its proposals for use of $200 million borrowed for rural road construction, got seven of 28 contracts let recently by the commission. Sixteen of the contracts were for rural roads.

Nello L. Teer, Durham contractor who was refused a court order which he sought in Superior Court directing that the commission spend the rural road funds solely for construction and permanent improvements, and not on roadbuilding machinery and equipment or on road stabilization (ENR Aug. 25, p. 10) has indicated that he will carry an appeal to the state Supreme Court. Prospects that it can be heard before next spring are dim, and state officials are proceeding with their program undeterred by the threat of further litigation. So far, that involves orders for almost $5,000,000 in construction equipment and for many tons of crushed stone.

In hearings on Teer's suit, the commission claimed that his firm is interested primarily in hard-surfaced road construction, not in road stabilization, which is part of the commission's program. Teer claimed that the road stabilization work would dissipate the bond money that was intended for the construction of roads "with a probable life at least equal to the term of the bonds."

Highway financing policy will present hot issue to Congress next session

ARBA convention speakers assert action next year on federal-aid system will set pattern for future control of roads

Congress is going to have a stirring battle on its hands next year when it gets down to the business of determining future federal-aid policy for highways. Advance rumblings of the approaching struggle could be heard plainly last week at the two-day Washington conference of the American Road Builders' Association.

One section of the impending battlefront received thorough discussion at the meeting. What Congress does on that sector—the 40,000-mile interstate system—can establish the future trend of federal aid and federal control for all highways, speakers pointed out.

Federal help for local roads?

A second important question facing Congress—on proposed federal help for rural local roads—came up for ARBA consideration. Delegates representing local interests agreed that these roads possess no real claim to federal assistance, but the general tenor of their remarks indicated small hope that Congress would be able to resist local political pressures over the years ahead. If federal help is given, Congress will have to decide whether the Bureau of Public Roads and the state highway departments are to be given authority to see that local funds are properly spent.

Federal aid policy for the overall primary system and for the secondary system got its full share of attention. Except for urban highways—which now need more than 25% of the federal appropriation, according to several speakers—the present methods of apportionment and administration were generally endorsed.

Differ on interstate aid

Only on the interstate system was there sharp division of opinion. For this network—that part of the primary system designated essential to defense—speakers disagreed sharply over the question of what part of construction costs should be paid by the federal government. Representatives of various organizations advocated federal percentages ranging from the present 50 percent up to 75 percent.

Thomas H. MacDonald, Commissioner of Public Roads, presented facts based on the recent study of the interstate system: At 1948 prices, it will cost more than $11 billion to make improvements needed now in this network. The construction program will have to be spread over many years. If scheduled for 20 years, the cost will amount to about one cent per vehicle-mile for the high-cost urban work and 0.6 cents per vehicle mile for urban parts.

Because of the great cost and the impossibility—for the states—of matching federal funds dollar for dollar from present revenue sources, chairman Samuel C. Hadden, of the Indiana Highway Commission, recommended a 75 percent federal contribution for the interstate network. Coming from a state official, his opinion was significant, but it did not represent any official view of the American Association of State Highway Officials. That organization within the next few weeks will attempt to work out at executive sessions its official recommendations on the whole broad problem of federal-aid policy for highways.

Spokesmen for two other organizations strongly opposed any departure from the present 50-50 ratio of federal-state payments. They pointed out that any increase in the federal government's share above 50 percent—even for a special system like the interstate network—will lead inevitably to broadened demand for more federal assistance. Gradually, they foresaw, the federal government would be induced to take over operation and maintenance of the highways—first the interstate system and later the other roads of the nation, by whomever built or administered.

Both Dawes E. Brisbane, research counsel for the National Highway Users' Conference, and Harold F. Hammond, Manager of the transportation and communications department, Chamber of Commerce of the U. S. A., expressed that same strong stand for their two organizations. Hammond's committee in the Chamber of Commerce will dig into the federal-state financing issue again when it meets Dec. 2.

Speaking for the American Automobile Association, Burton W. Marsh, director of traffic engineering and safety, made an exception for the interstate system. On that network, his association would be willing to have the federal government pay two-thirds.

$1 billion air center for Tennessee

The multi-million dollar Air Engineering Development Center to be built by the Air Force for development and evaluation of air weapons will be located at Camp Forrest, Tenn., 66 mi. southeast of Nashville, Air Force Secretary Symington announced last week.

Approved by the President, the Secretary of Defense and by the Research and Development Board, the site was recommended by Sverdrup & Parcel, Inc., St. Louis consulting engineers, after a three and one half-year study of more than 25 possible locations throughout the land. Primary requisites for AEDC are large amounts of power and water. Within TVA's transmission network, the site will be able to draw upon TVA, which has large new generating facilities underway. Power demands at one time were reported to run as high as 1,000,000 kw. More recently, loads of 300,000- to 500,000 kw. have been spoken of in this connection.

Congress expects to spend $100-million on the first stage. At the last session, it voted $6,000,000 in cash and contract authorizations of $24,000,000 to get the project started. Ultimately, the center is expected to cost $1 billion, and to supersede Wright Field, at Dayton, O., as the major research and testing installation of the Air Force.

Survey parties are now moving into the 33,000-acre area. Details of property transfer to the federal government are being negotiated with Tennessee and the city of Tullahoma.

Among the items Congress has talked of for the center are a $40,000,000 supersonic propulsion chamber, a $16,000,000 hypersonic wind tunnel, and a $13,000,000 altitude chamber for testing jet engines.

FPC re-opens New York's St. Lawrence power plea

The Federal Power Commission again is considering the New York State Power Authority's application for a license to develop the St. Lawrence River power project.

Action was postponed last March to see what Congress would do with President Truman's request that the U. S. undertake the job. Hearings on the New York application had been completed and briefs filed at the time that the President made his request. In deciding to re-open the case, FPC ruled that it should not delay proper applications unnecessarily.

PERSPECTIVE...

Bigness as such is wrong

"As a young civil engineer, I was offered a chance to leave my job and go over to work for a competitor. But the two owners got together, vetoed the move. Since then, I've been crusading—I want so many competitors in all industry that they not only won't sign an anti-raiding pledge—they won't even belong to the same club."

That's David Cushman Coyle speaking. Currently, he's a man to whom the construction business can afford to give close attention: He's major-domo of and guiding brain behind a Congressional campaign aimed at bigness in business.

Next year, except for social welware, no other item on the Fair Deal's agenda for Congress will have higher priority than the administration's assault on bigness in industry. The government now is attacking the problem on three fronts—prosecution, regulation, investigation. There's the Anti-Trust Division of the Justice Department piling up ever more cases aimed at splitting big industries (DuPont, Western Electric); Federal Trade Commission, using its power to set competitive prices by fixing maximum discounts allowable.

Investigation is the task given the House Monopoly Investigating Committee, whose chairman is Rep. Emanuel Celler, of New York. It'll cover the whole field of anti-trust policy, of course, but primarily, its target is bigness. Coyle is consultant to the committee, but he'll do the planning, the policy thinking, the lining up of witnesses, the briefing of committeemen as to the line of questioning that's wanted—and much of the questioning—himself.

Coyle wants the public to look askance at bigness, whether it's in the production of electrical equipment or construction machinery, corsets or clay pipe, cigarettes or cement. He doesn't like monopoly or concentration of control over anything reasonably important to everyday living. Actually, he's more concerned with monopoly and concentration of control, as such, than he is with bigness as such. But he's found that he can't get at the former without first tying a thoroughly unsightly can to the latter. Consequently, Coyle is engineering a two-year campaign in which "bigness" as such will be the target. The hope is that, with bigness no longer a sacred cow, something effective can be done about limiting economic control which rests outside the hands of government. Meanwhile, he'll be shooting at:

The breakpoint at which big business begins to suffer from inefficiency.

The effect concentration has on the ability of people freely to choose where they'll work.

The benefits of bigness, and the question of whether government ought to regulate industries that can't be broken up and still provide the public the things it needs.

"Freedom," says Coyle, "is dependent to a large degree on the number of separate ways of making a living that a man can turn to without too much delay. Bigness in industry and in labor unions cuts down the ways of escape."

Coyle's escape was made in the earliest days—and with the help—of big government. He's been content to stay close to an ever-bigger government since. Starting with the New Deal's first public works program in 1933, he has studied anti-trust laws for a Senate committee, reported on the basing point problem to the Federal Trade Commission and he wrote a Senate committee's voluminous report on the TVA investigation. He's done research on corporate mergers and big business practices for a private foundation. He's written a book "Day of Judgment," published by Harper & Brothers, which gives a pretty clear picture, incidentally, of what tack Coyle's present Congressional inquiry will take.

Before escaping to big government, Coyle had an engineering and construction background which should prove invaluable to him when the investigation reaches these fields. His career began with a Princeton A.B and a Rensselaer C.E.—and a job in 1910 with Grunvald Aus Co., New York City, where he worked on wind-bracing of the Woolworth building. For 20 years, he engineered structures—from steel coal breaker towers to New York's Ritz Tower. Much of his work was in the coal industry, a lot more on large buildings.

David Cushman Coyle
. . . the public should look askance . . .

In 1930, he opened his own consulting engineering shop in New York, whence he escaped three years later to government.

Although he has been more of an economist and public servant since 1933 than an engineer, he was nominated, in 1937, for presidency of the ASCE. This was by declaration and it came in protest against an attack by the official nominee and other elder statesmen of the society against TVA. He didn't win.

It hasn't taken long for Coyle's hearings to touch the engineering and consulting trade, although they haven't yet got directly at construction. It was only a few weeks back that the Celler committee took testimony from a witness who accused the Association of Consulting Management Engineers, Inc., of New York, of attempting to monopolize millions of dollars worth of engineering projects financed by the Economic Cooperation Administration.

Although Coyle's first "case study" had to do with industrial management, it's obvious that the investigation can't stay away from the construction industry long—both from the background of Coyle, and by the nature of the industry itself. Combinations of manufacturers in industry organizations, contractor-combinations to do specific jobs—seem to offer too tempting a field for investigation for committeemen to ignore.

Parkway extensions speed N. Y. travel

The wind-up of a big season in construction of parkway extensions to speed traffic further out of New York City is evidenced by reports of dedication and tape-cutting ceremonies.

The Long Island State Park Commission opened a 2¼-mile addition to the Southern State Parkway Nov. 14 and has 4½ miles of a 9-mile Northern State Parkway extension ready for mid-December opening. Upstate, the Taconic State Park Commission recently has dedicated and opened for weekend traffic its 21-mile extension—largest single parkway section ever completed as a unit in the state; clean-up operations will finish in December. And in Westchester County, the Saw Mill River Parkway has been pushed northeast another five miles from Chappaqua to Mount Kisco.

On the Taconic route, pleasure traffic can now drive 80 miles out of New York—over half way to Albany—on parkway. The $7,000,000 extension (from Route 55, east of Poughkeepsie, to Route 199 at Lafayetteville) eliminates Poughkeepsie as a traffic bottleneck, saving 35 minutes in travel time formerly lost there and relieving that city's streets of much through traffic. Divided except at major bridges, north- and south-bound roadways each have two 12-ft. lanes. Maximum grade on the new 50-mph. road is 7½ percent, and curves were laid out on a 400-ft. minimum right-of-way with 1,400 ft. as the shortest radius.

Second section due

Bids on another 5-mile length will be advertised in December so that clearing and grubbing, at least, can be started before next spring. Funds are in hand for construction of these next five miles in 1950, and appropriation of additional money next April will determine just how much farther the parkway will go in '50 and '51. Ultimate plans take the route northward into Rensselaer County and connect it with the projected Berkshire Throughway to New England.

On Long Island, additions to the Northern State and Southern State Parkways—major arteries paralleling eastward from New York City—bring the former to within three miles of a projected north-south parkway to connect it with Sunken Meadows State Park on the north shore and the Southern State Parkway and Captree State Park on the south shore. An article on the newest additions to Long Island's parkway system is to appear in a forthcoming issue.

While New York State reaches farther and farther out to bring city motorists quickly and safely by parkway to seashore, parks and mountains, New Jersey reports that traffic will be using one link of its first parkway by the end of this year; construction on Route 4 in Middlesex and Union counties is nearing completion.

Paving contracts have been awarded for nine miles between Centennial Avenue, Cranford, and Route 35, at Fords in Middlesex County. Bridges and grading have been completed on the six miles from Centennial Avenue to Route 27, and although the steel strike has interfered with bridge construction between Routes 27 and 35, progress is being made on surfacing.

Start R. I. expressway

Ground has been broken for the Olneyville Expressway, a $7,500,000 project which will eliminate one of the worse traffic bottlenecks between Hartford and Boston.

A modern system of one-way elevated roads, the expressway will bridge Olneyville Square in West Providence, where 10 streets converge.

N. Y. building code group named; McGrew chairman

Gov. Thomas E. Dewey has appointed the New York Building Code Commission, created this year to draft a modern, permissive state building code.

Edward J. McGrew, Jr., former New York City Public Works Commissioner, was named chairman, to serve a 10-year term. Appointed also:

George B. Cummings, Binghamton, an official of the New York State Association of Architects and the American Institute of Architects.

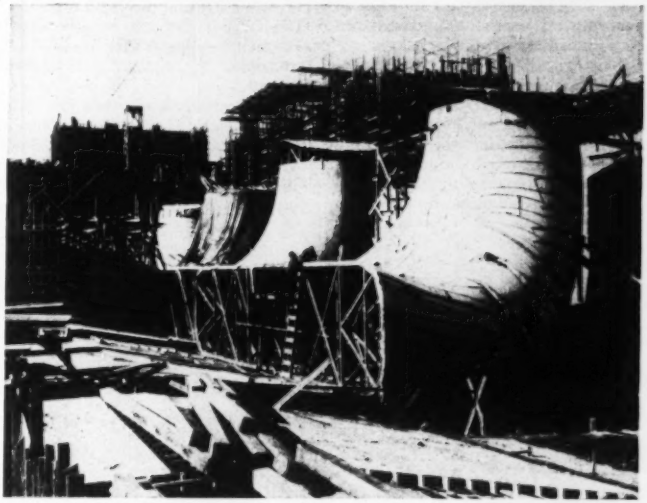
Walker S. Lee, Rochester's superintendent of buildings.

Ralph A. Lehr, Buffalo, Erie County attorney.

William S. Lescaze, New York, designer of many industrial, educational and residential buildings.

McGrew was appointed deputy commissioner of Public Works in 1934 by the late Mayor LaGuardia. After service in Germany and Washington during the war with the Army Engineers, he became commissioner, later to enter private practice.

In creating the commission earlier this year, the legislature permitted any municipality to make the code ineffective in its own territory by resolution.



DRAFT TUBE FORMS—Nearing completion are forms for the eight 20,000-hp. units that will operate at Chenaux generating station on the Ottawa River at Portage du Fort, Ont. This low (40-ft.) head plant is behind a 90-ft. high main dam stretching 1,400 ft. across the interprovincial channel. Dams 1,100 ft. and 1,400 ft. long control two other channels at the $25,000,000 project. The Hydro-Electric Power Commission of Ontario is building this and two other projects on the Ottawa: Des Joachims and La Cave, respectively 60 and 120 miles upstream. Pentagon Construction Co., of Montreal, holds the Chenaux construction contract. (ENR staff photo).

Overtime pay clarification due soon

A major complaint against the Wage-Hour law has been that it does not say what "regular rate of pay" means. Knowing the answer is important, because overtime pay is based on one and a half times the "regular rate."

This complaint will no longer be justified after next January when the new wage-hour amendments just passed by Congress go into effect. The revised law defines "regular rate." More than that, it specifically lists "fringe" payments which are not to be counted as part of the "regular rate." These will be helpful guides to employers in figuring their overtime costs.

Employers may proceed

In a sense, these are clarifications of what is intended by the present law, so employers should feel safe in following the guide as of now. This is pertinent, for example, in regard to Christmas bonuses. They will be paid about a month before the amendments go into effect. You can disregard these bonuses in computing overtime pay if they are a reward for service and are not measured by, or dependent on, the number of hours worked, the worker's production or his efficiency. This rule applies similarly to any year-end bonus or a bonus given on a special occasion.

Even a payment in recognition of services performed during a specified period may be excluded from the regular rate if it meets this test:

Both the fact that the payment is made and its amount must be determined solely at the employer's discretion. There must be no prior contract, agreement or promise that would cause the worker to expect it regularly.

Stipulates conditions

Profit-sharing or savings plan payments are excluded if the plan qualifies under regulations which the wage-hour administrator will issue. Among the restrictions the regulations will contain is that the payments under these plans must not be distributed on the basis of individual output or efficiency.

Pay for time not worked does not affect the "regular rate" either. That includes pay for: unworked holidays, vacations, illness absences, periods when there isn't work, layoff-pay, and reporting pay.

Also excluded from the "regular rate" are pension or welfare plan payments made, irrevocably, by an employer to a trustee or third person.

Some time-and-a-half premium payments not only do not affect the "regular rate," but also may be counted against any overtime pay due under the law. This is now true under the ban on overtime-on-overtime, also passed by this Congress. These are time-and-a-half payments made for:

Daily or weekly overtime under some other law or pursuant to a contract or practice.

Saturdays, Sundays, holidays, day off or the sixth or seventh day of the work week.

Work outside the normal workday or workweek.

Here's the new definition of "regular rate": All remuneration for employment paid to, or on behalf of, the employee," with the exceptions referred to above.

14-block paving job done in one day at Baltimore

Seven contractors joined forces to set what they believe is a record for street paving—14 blocks of a 40-ft. street—through one of Baltimore's busiest sections. The work was completed between 5 a.m. and 7:30 p.m. on a Sunday.

There were 365 men on the job, sixteen 10-ton rollers, nine paving machines and 83 trucks. They placed 3,500 tons of material on about 25,000 sq. yd. in the form of a one-in. layer of asphaltic binder and a one-in. topping of sheet asphalt.

There were no serious traffic jams or delays, even though cross-street traffic was allowed on the new paving as soon as it had cooled. Preparatory work, including the raising of about 500 manholes, was done some time previously. James H. McKay, chief highway engineer for the city, was in charge of the $50,000 job.

Costs stall work on Brooklyn Bridge

New York city officials continued to debate this week when and how to proceed with the reconstruction of the Brooklyn Bridge.

When bids on three alternative proposals were opened recently, only one came within the limitations established for the job by the Board of Estimate—that for the south roadway only. As against a Board of Estimate limitation of $2,700,000 for Alternate 1, the entire job, estimates of David B. Steinman, consulting engineer, New York, were $3,235,414 for that contract. Among bids which were received on Alternate 1 were three for $3,322,536, $3,415,240 and $5,078,509.

Several moves possible

Public Works Commissioner Frederick H. Zurmuhlen said last week that no decision had been reached whether to submit the project for rebidding under the original $2,700,000 limitation, to attempt an increase in the limitation, or to go ahead on single-roadway alternates. His deputy commissioner, Albert H. Morgan, told ENGINEERING NEWS-RECORD that unless re-bids are sought under the original limitation, the project will have to be re-submitted to the Board of Estimate for a new limitation. This, he indicated, could hardly be done before next year, when a new capital budget will be approved by the Board of Estimate.

It might be decided to proceed on a single-roadway basis since the plans call, in any event, for reconstruction of the south roadway first. That project, Alternate 2, drew the only bid within the Board of Estimate limitation. This bid, for $1,531,658, was submitted jointly by Knauer & Christensen and Fischbach & Moore, both of New York. Legal limitation prescribed for Alternate 2 is $1,550,000.

Discrepancy explained

It was explained that the discrepancy between the Alternate 1 limitation and Steinman's estimate of $3,235,414 arose from the fact that the Board of Estimate set its figure before final data was before it.

Whenever it's performed, the reconstruction calls for the removal of two stiffening trusses and the strengthening of two others. Outside trusses on each side will be built up to the depth of the other trusses on the bridge. Intermediate trusses, which now separate the automobile roadways from trolley tracks, will be removed. Then the bridge floor would be paved from the outer trusses to the inner trusses, and trolleys would use the bridge no more. Buses and passenger cars will be the only vehicles permitted upon the bridge after it's rebuilt.

Top chords of the two intermediate trusses would be used as top chords of the built-up outer trusses. The remainder of the material needed to deepen the outer trusses would be new, Steinman asserted.

Washington attacking pulp pollution

Pulp liquor discharged from 13 Washington pulp mills produces a pollution load equal to that provided by domestic sewage from a population of 8,000,000 people. That's the assessment of E. F. Eldridge, director and chief engineer of the Washington Pollution Control Commission.

Another 700 industries have discharge wastes that contribute significantly to the pollution problem, Eldridge added. Included in these are 113 fruit and vegetable canneries, 73 fish and shellfish canneries and 11 breweries.

Treatment of pulp waste is infeasible, Eldridge says, leaving recovery as the only anti-pollution method. And he attributes the decline in commercial and sports fishing to pollution. It's a definite barrier to fish life in several Washington rivers, he added.

New process used

An attempt to control pulp waste pollution is underway at the Weyerhauser pulp mill, at Longview. Foreseeing that the question of pulp-mill effluence would one day become a major public issue, management switched that plant from a sulphite to a magnesium process. Results of a pilot plant operation during the war indicated a possible recovery of the process chemicals as high as 95 percent. High recovery of these chemicals is necessary for economic feasibility.

The new Weyerhauser mill, although it reached capacity last July, hasn't been able to recover more than 75 percent of its magnesium and 65 percent of its sulphur. Another complication of the magnesium process is that corrosion of pipes and other equipment must be prevented, along with scaling of pipes and heating surfaces of furnaces in which the waste liquor is burned.

Process should spread

Other plants may be expected to adopt the magnesium process after Weyerhauser has worked the "bugs" out of it. In particular, the process is being studied for use at the proposed new mill of the Ketchikan Pulp and Paper Co., at Ketchikan, Alaska.

Canners and the Pollution Control Commission are cooperating in a preliminary study of vegetable and fruit cannery waste disposal, being carried out now by Prof. Frederick K. Erickson, of the Washington State College civil engineering department. More extensive work is to go on next year.

Right now, the primary problem is to determine how the load of waste materials discharged as a result of corn and pea processing may be reduced or eliminated.

One method under experiment is the re-routing or treatment of overflow blanching water. Particularly in connection with pea-blanching wastes, this possibility is being studied to determine the value and use of the end products from such processes as dehydration, fermentation and chemical treatment.

Housing record definite as starts continue heavy

Housing starts for 1949 definitely will exceed the 1925 all-time record of 937,000 units, it became apparent last week as the Bureau of Labor Statistics estimated that 100,000 nonfarm dwellings had been started in October.

With the 100,000-start estimate for September (ENR Oct 20, p. 30), starts for the first ten months of the year now stand at 843,000—up 28,200 over 1948—and BLS statisticians believe that the September figure may be revised upward. At this rate, BLS believes, 1949 can't miss getting very near the 1,000,000 mark—more than bearing out ENR estimates of 950,000 for the year.

Housing starts this year are running counter to the normal trend. Ordinarily, they drop off from a peak in early summer. Last year, the high figure was recorded in May—at 103,000—and the totals dropped to 82,200 in September of 1948, and 73,400 in October.

President approves first funds for new housing

First federal money to go to local housing authorities under the new public housing law will come out of the 107 planning loans approved this week by the President. They total nearly $20,000,000, to be drawn upon by the localities as needed to pay architects and engineers. Public Housing Administration screened them as surefire legal loans from among 172 requests; they have been approved by City Council resolutions, and they come clearly within the requirements of state legislation, PHA believes.

Project plans must be completed before PHA can enter into rent subsidy contracts with the local authorities. Those contracts must be completed before the projects can be financed—usually by local bond issues, but, if necessary, by federal loans.

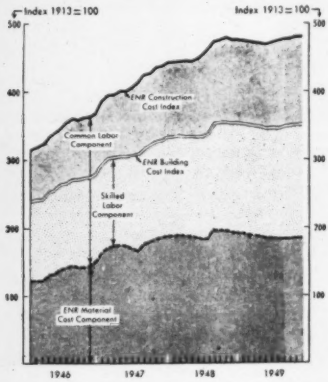
PHA continues optimistic

PHA has not backed down on its estimates to the House Appropriations Committee that the low-rent housing program will have 20,000 dwelling units under construction by March 31, 1950; 50,000 by June 30; and 112,500 by Dec. 31. For the calendar year 1950, that would mean the start of roughly $1 billion of construction.

The six-year program set up by the Housing Act of 1949 authorizes the start of construction on 810,000 low-rent units. At a permitted room cost of $1,750 (up to $2,500 in high-cost cities) for building and equipping the dwellings, the law can conceivably produce $8 to $10 billion of construction; the projects necessarily will require concurrent investment in utilities and other community facilities.

NEW FILTRATION PLANT—This 100 mgd. softening and filtration addition (left) to the Southern California Metropolitan Water District plant at La Verne cost $4,000,000. It doubles flow of Colorado River water treated by the plant. Filtration precedes zeolite softening.

CONSTRUCTION BUSINESS



ENR cost indexes lower

There were scattered reductions in lumber prices again last month, and common construction labor rates went into their third month unchanged, with the result that ENGINEERING NEWS-RECORD's Construction Cost Index halted its gradual five month rise, and eased back 0.5 point to 480.02.

Skilled wages increased fractionally in the 20 cities covered, but not sufficiently to overcome the lumber price-cuts. The ENR Building Cost Index for November is down 0.25 point to 352.77, from the revised October value of 353.02. Revisions are due to an additional five-cents an hour for tool replacement, granted Cleveland carpenters effective Aug. 15.

Engineering News-Record
Construction and Building Cost Indexes
(1913—100)

1949	Construction	Building
November	480.02	352.77
October	480.54	353.02*
September	479.78	351.98*
August	478.28	350.85
July	477.46	349.46
June	473.78	349.28
May	472.10	348.92
April	474.34	351.42
March	474.80	352.54
February	473.37	352.94
January	477.41	354.98
Oct. '48 peak	480.21	357.07

* revised

November wage-rate report

Common construction labor rates are unchanged in November, according to reports gathered by ENGINEERING NEWS-RECORD from 20 major cities in the U. S. The average of unskilled laborers rates is $1.478 for the third straight month, roughly five percent above scales in the same cities a year ago.

Skilled rates however, show fractional increases this month, as an average of three skilled trades' wages goes up to $2.462 from October's $2.458. The 20-cities skilled average is also five percent above a year earlier. A short review of the 1949 construction labor picture is given in the accompanying table.

Construction Wage Rates—1949

Month	Common*	Skilled**
November	$1.478	$2.462
October	1.478	2.458
September	1.478	2.454
August	1.470	2.436
July	1.465	2.413
June	1.441	2.394
May	1.431	2.384
April	1.428	2.379
March	1.424	2.377
February	1.417	2.354
January	1.417	2.354

* average for unskilled workers on building and heavy construction. ** bricklayers, carpenters and structural iron workers, averaged.

Materials price curve down; resumes 15-month decline

The ENGINEERING NEWS-RECORD materials cost component resumes its 15-month old decline in November, giving up 0.5 of the 0.75 point rise which broke its fall momentarily last month.

Late reports show that lumber prices in the 20 major cities covered by ENR have dropped an average $0.53 per M. Based on an average of short leaf yellow pine and Douglas fir 2x4 prices, lumber is now down to $78.56 per Mbf from $79.09 a month ago. A late-September rally of the lumber market boosted the 20-cities average $0.75 last month, in the first rise since July 1948.

Steel prices are unchanged, and the hopes for a possible price reduction have been abandoned as a result of the strike.

Cement prices are up one cent per barrel to $2.95 for the 20-cities average, in the first rise since cement reached its peak last May. The table below shows the 1949 fluctuations of prices included in the ENR materials component of construction and building cost indexes, with the exception of structural steel prices that have held to $3.25 per cwt. since mid 1948.

Engineering News-Record
Materials Cost Component

Month	Cement per bbl.	Lumber per Mbf.	Weighted comp'nt*
November	$2.95	$78.56	184.42
October	2.94	79.09	184.94
September	2.95	78.34	184.18
August	2.95	78.43	184.28
July	2.96	78.54	184.46
June	2.96	79.57	185.58
May	2.99	79.70	185.90
April	2.98	82.36	188.74
March	2.98	83.51	190.00
February	2.97	85.39	191.97
January	2.96	87.32	194.01

* includes structural steel; $3.25/cwt. to date in 1949. Cement is in bulk; lumber is pine and fir 2x4 average.

Indexes even or rising

The Turner Construction Company building cost index for November is unchanged at 407, same as its June value (1913 = 100). The Turner index hit a peak of 430 in September, 1948, from which it had receded 5.3 percent to 407 by June, 1949. Its current value is the lowest recorded by the index since late—1947.

The Smith, Hinchman & Grylls building cost index moved up one point to 211 for October (1926 = 100). A monthly review of the cost picture by that company sees "the elements making up the building cost index more confused than ever". Lumber prices are described as "edging up", and cement "has definitely turned upward in some parts of the country." Other materials remain generally unchanged, and labor "is maintaining its improved performance."

E. H. Boeckh's U. S. average building cost index for commercial and factory brick-concrete type construction increased fractionally for September to 386.6 (1913 = 100). This means costs were slightly below a year earlier, when the index was 388. An interim peak of 391 came in October and November of last year, and was reached again last March; the low was 385 in May.

Highway costs reduced 10%

The Composite Mile Index of Federal-Aid highway construction prices continued its 1949 downtrend in the third quarter, with a 4.5 percent decline to 148.7 (1925-29 base). Overall drop in highway bid prices this year has been 10 percent, according to the index, with prices currently lower than at any time last year. Accompanying table shows recent trend in highway construction bid prices.

Composite Mile Index
Federal-Aid Highway Construction

	3rd/4 1949	2nd/4 1949	1st/4 1949	1st/4 1948
Comm. excav.	108.6	116.8	119.7	122.5
Concr. pvmt.	160.4	165.9	172.7	150.6
Structures	205.8	213.5	223.6	215.7
Comp. Mile	148.7	155.5	161.4	150.5

Cement shipments rise 14%

September shipments of 22,778,000 bbls. of finished portland cement were 14 percent above a year ago, reports the Bureau of Mines. Production, at 19,187,000 bbls., was 3 percent higher. Stocks by month's end were down to 10,799,000 bbls., but still 53 percent above a year earlier.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 70, went to press.)

Research Center—U. S. Department of Air Force, Washington, D. C., has selected site at Camp Forrest, Tenn., for research center for testing faster-than-sound planes. Total estimated cost is $1 billion. $100 million has been appropriated for wind tunnels, etc. Sverdrup & Parcel, St. Louis, Mo., consulting engineers assisted in selecting site. (See also news pages this issue.)

Dwellings—Dow J. Zabolio & Associates, Houston, Tex., plans low-cost dwellings in industrial area of Houston, $12,500,000.

Power Plant—Southwestern Gas & Electric Co., Longview, Tex., plans expanding Knox Lee Electric Plant, with transmission lines on Lake Cherokee, Longview, Tex., project to cost $8,700,000.

Garrison Dam—Peter Kiewit Sons Co., Omaha, Neb., and Morrison-Knudsen Co., Inc., Boise, Ida., have been awarded contract for excavation and main embankment, Stage 3, Garrison Dam and Reservoir, N. D., by U. S. Engineers, Fort Lincoln, N. D., at $5,740,500.

Hospital—Bids will be taken about January 2 by Mount Sinai Hospital, New York, N. Y., for constructing hospital to cost $7,000,000. Kahn & Jacobs, New York, N. Y., are architects. Fred M. Severud, New York, is engineer for the job.

Mexican Projects—Petroleos Mexicanos, Mexico City, Mexico, plans constructing shipyard at Tampico, to cost $23,000,000. Nacional Financiera, Mexico City, plans iron and steel works at Saltillo to cost $5,000,000.

Bridges—Maryland State Roads Commission, Baltimore, awarded contract for substructure for Severn River Bridge, Annapolis By-Pass to Merritt-Chapman & Scott Corp., New York, N. Y., at $3,349,800. Award was also made to Construction Aggregates Corp., New York, for island piers, Chesapeake Bay Bridge at $1,878,750.

Bonds Voted—Marin Municipal Water District, San Rafael, Calif., voted $4,000,000 bonds for dam, filter plant and pipeline. James S. Peters, San Rafael, is chief engineer. Public Utilities Commission of San Francisco, Calif., voted $4,000,000 for terminal building, runway extensions, etc. for Mills Field Municipal Airport. W. P. Daly & Associates, San Francisco, are architects. Los Angeles County, voted $4,500,000 bonds for contagious diseases hospital at Los Angeles. Paul R. Williams and Adrian Wilson, Los Angeles, are architects.

Generating Plant and Power Lines—Matanuska Electric Association, Palmer, Alaska, plans constructing steam generating plant at Palmer, Alaska, and line extensions from Jonesville to Chugach, Alaska. Estimated cost of project is $4,500,000.

Housing—Jeffress-Dyer, Inc., Washington, D. C., will construct with own forces a 10-story apartment at Ann Arbor, Mich., to cost $4,500,000.

Navy Housing—Patuxent Gardens, Inc., Amityville, N. Y., will construct, manage and finance housing at Patuxent River Naval Air Station, Md., for the Bureau of Yards & Docks, Washington, D. C. Estimated cost is $2,000,000. This is the first Navy housing awarded under the Wherry Act.

Residences—Folmer & Flynn, Montgomery, Ala., will construct for H. M. Davis, residences in Mobile Heights, Mobile, Ala., at about $2,250,000.

Reservoir—City of Pasadena, Pasadena, Calif., received low bid from E. C. Nickel, Arcadia, for 50 m.g. Hasting Reservoir at $1,049,729. James M. Montgomery, Pasadena, is engineer.

Hospital—O. W. Burke Co., Detroit, Mich., has been awarded contract to build medical unit at Northville State Hospital, Northville, Mich., by the Department Administration, Building Division, State of Michigan, Lansing, at $2,362,500. O'Dell, Hewlett & Luckenback, Detroit, are architects.

Dwellings—Meadowbrook Building Co., San Antonio, Tex., plans constructing dwellings at Meadowbrook and Gulf Freeway sites, San Antonio, to cost $3,250,000.

Schools—City of Hartford Board of Education, Hartford, Conn., plans school to cost $1,040,000. Ebbett, Frid & Prentice, Hartford, is the architect. Also Sherbrooke Ave. school at $2,353,000. Malmfeldt Associates, Hartford, are architects.

Residences—Frank Lount & Son, Winnipeg, Man., will construct 500 residences by own forces in Winnipeg, Man., at $3,200,000.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Nov. '47	480.02	230.75
Building Cost	Nov. '49	352.77	190.70
Volume	Oct. '49	248	109

Activity This Week

As reported to ENR (in millions of dollars)

Amount of Contracts let

	Week of Nov. 17 1949	Cumulative 1949 (46 wks.)	Cumulative 1948 (47 wks.)	% chge av.wk.
Federal	$12.6	$904.7	$874.4	+6
State & Mun.	87.6	2,862.0	2,377.7	+23
Total Public	$100.2	$3,766.7	$3,252.1	+18
Total Private	117.5	3,456.8	3,042.9	+16
U. S. Total	$217.7	$7,223.5	$6,295.0	+17

Contracts by type of work

	This Week	Cumulative 1949 (46 wks.)	Cumulative 1948 (47 wks.)	% chge av.wk.
Waterworks	$4.6	$188.0	$176.6	+9
Sewerage	18.5	253.6	201.8	+28
Bridges	14.3	327.0	259.7	+29
Highways	16.7	827.2	914.3	−8
Earthworks, Waterways	11.2	467.7	470.7	+1
Buildings, Public	30.2	1,429.7	1,028.4	+42
Industrial	15.3	877.8	994.4	−10
Commercial	81.5	2,122.9	1,676.7	+29
Unclassified	25.4	729.7	572.3	+30

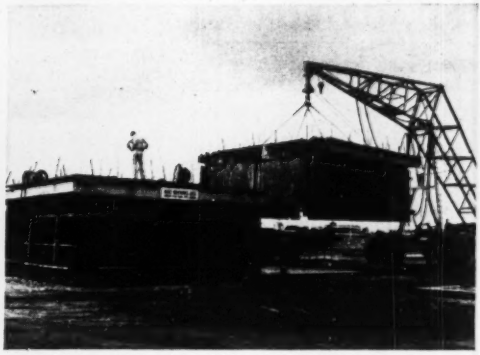
NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (45 wks.)*	Cumulative 1948 (46 wks.)	% chge av.wk.
NON-FEDERAL	$5,014.7	$3,992.9	+28
Corporate Securities	2,013.3	1,854.9	+11
State and Municipal	2,616.4	1,645.7	+62
U. N. Building Loan	....	65.0	...
Federal-Aid Highway	385.0	427.3	−8
Federal	1,748.2	1,558.9	+15
Total Capital	$6,762.9	$5,551.8	+24

* Week of Nov. 10; 46 weeks not available.

1 THE FLOOR SLAB for the low-rent housing project in Norfolk is cast to a depth of 6 in. on 4 in. of coarse sand.



2 A SINGLE MOLD for the walls of each house is set on the floor slab by a 30-ton crane. Two molds form one building.

Houses Go Up Fast—Costs Come Down

SOME NOVEL concreting techniques are being used by the Ibec Housing Corp. to erect two attached houses per day at Marshall Manor—a 204-unit, low-rent housing project in Norfolk, Va. And despite the pioneering nature of the operation, Ibec is making money on the job.

The dwellings are being built under a lump-sum contract averaging $6.08 per sq. ft. of floor area. This price includes the heating system, hot-water heater, closets, cabinets, plumbing, and electrical wiring and outlets, but does not include such items as land and improvements, financing costs, utilities and landscaping.

Using an expanded-shale aggregate, Ibec casts all the walls for a house at one time in a single form, which is used repeatedly. Roof slabs are formed on the ground and placed on the walls after the concrete has hardened.

Each building consists of two one-story houses containing two bedrooms, a living room, bathroom, kitchen and storage space. The units are 24x28 ft. in plan.

The floor of each building consists of a reinforced concrete slab 6 in. thick cast directly on the ground. Walls and partitions are 8 ft. 8 in. high. Exterior walls are 8 in. thick and interior walls 6 in. The bathroom partitions, of precast concrete, are 2 in. thick. Outer walls are reinforced at the top with a cage formed with four continuous ⅜-in. round diagonally placed bars, and additional reinforcing is placed around all openings.

Roof slabs are 4 in. thick, reinforced with 4x4-in., 66-lb. and 44-lb. mesh. Each roof consists of two 25-ft. 6-in. x 31-ft. 10-in. slabs, which overhang the building on all sides. They are insulated with 1½-in. glass fiber batts and covered with three-ply built-up roofing.

Walls for two houses cast per day

The unique methods employed by Ibec in constructing these houses begin after the site has been graded, the subfloor plumbing lines installed and the concrete for the floor slab placed and hardened. A steel form or mold, for the exterior and interior walls (except bathroom) of each double house, is placed on the slab in the morning. Concreting of all walls and partitions is done in early afternoon—frequently in only one hour—and the concrete is allowed to set overnight. First thing the next morning the forms are stripped and moved to a new site.

The mold weighs 25 tons. Despite its weight and cumbersomeness, however, it is handled with speed and precision by an electrically controlled crane of 30-ton capacity and great mobility that was developed during the war by Le Tourneau to facilitate the clearing of airfield runways immediately after a plane crash.

The form is suspended from a four-leg steel framework, which has integrated jacks at the base of the legs. It can be swung freely and opened up to permit workmen to install the steel reinforcement without any hindrance.

When the mold is placed by the crane, each jack leg is lowered into a shallow pan containing heavy grease. This not only provides adequate bearing but also permits minor adjustments in position without the necessity of relifting the forms.

When the mold is exactly in position, the jacks are adjusted to establish contact between the form and the floor slab. The mold then is closed and locked by lever devices at the top.

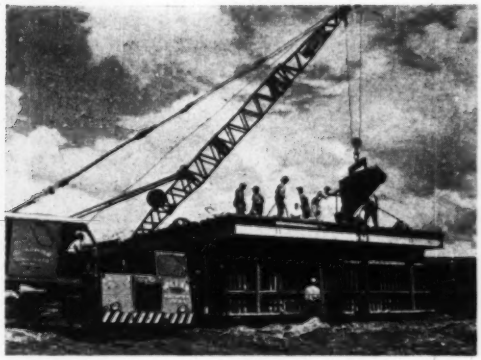
For corners, Ibec uses forms made of nylon and rubber, inflated with compressed air, to speed up the setting of the wall formwork. These forms, which actually close the molds at inside corners of walls and partitions, can all be inflated in 3½ min. (See form details on p. 34.)

Forms for door and window openings are clamped in position when the mold is placed and remain after it has been removed. They are not stripped until the lintels that they support have had an adequate time to set.

Concrete is raised by a crane operating on the ground, dumped into a hopper on the working platform on top of the mold and then chuted into the forms. During this operation, the mold levers are covered with canvas bags for protection.

Roof cast on ground

After the walls have been completed, the roof slab is placed on top. To simplify the roof construction, Ibec casts the slab on the ground. Thus, only edge forms are required; the



3 A CRANE places concrete in a hopper on the platform over the mold from where it is chuted into the forms.

4 MEN pull levers at the top of the mold to strip it away from the cast exterior walls after they have set overnight.

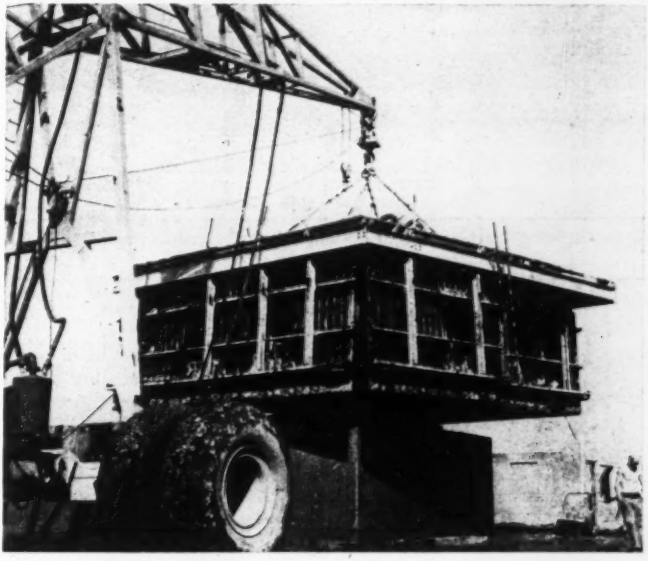
claborate shoring and building of platforms normally associated with reinforced concrete roofs are eliminated; and at ground level placing of reinforcing steel and casting of concrete are easier.

After the top surface has been screeded, the concrete is finished by machine. Sprayed with an oil film to prevent bond, the slab, with the edge forms moved up, may then be used as the casting bed for the next slab to be formed, thus minimizing the amount of fine grading necessary to prepare additional casting beds. Stacks of as many as 16 slabs are located strategically around the site.

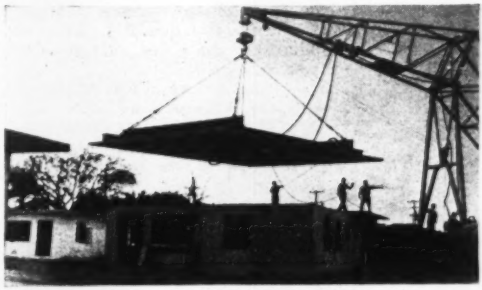
Roof placed by the 30-ton crane

After the concrete has hardened, a crane equipped with a vacuum lifting mat removes the slab from the forms and places it on a house. The patented vacuum mat, invented by K. P. Billner, is so designed that should the vacuum pump fail, the slab will not be released for at least 5 min.

For accuracy in placing the roof slab with the proper overhang on all sides, the crane is equipped with a tagline that permits adjustments in posi-

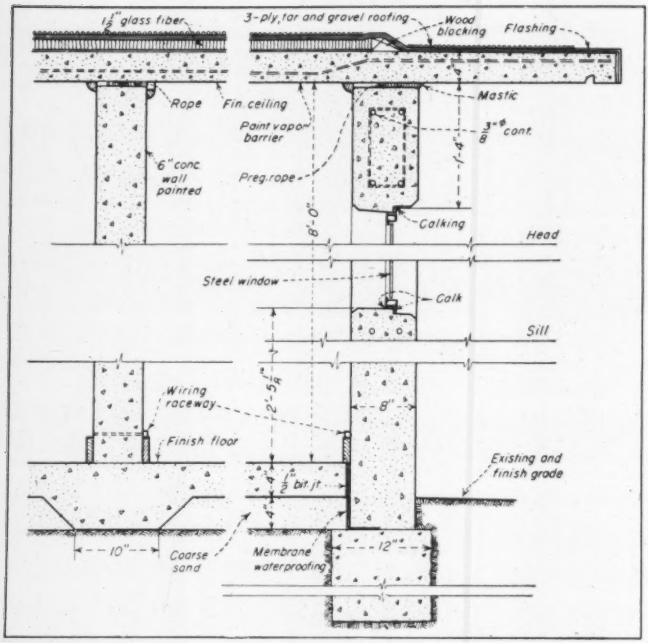


5 UP COMES THE MOLD, ready for re-use elsewhere, after the concrete walls have hardened. It weighs 25 tons, is moved by 30-ton crane.

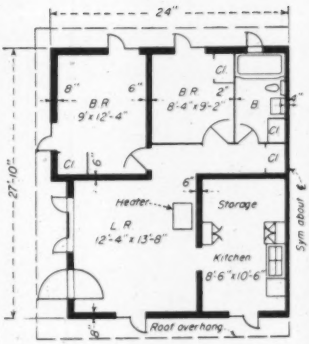


6 THE ROOF SLAB, which has been precast on the ground, is then placed on the walls with the aid of a vacuum lifter.

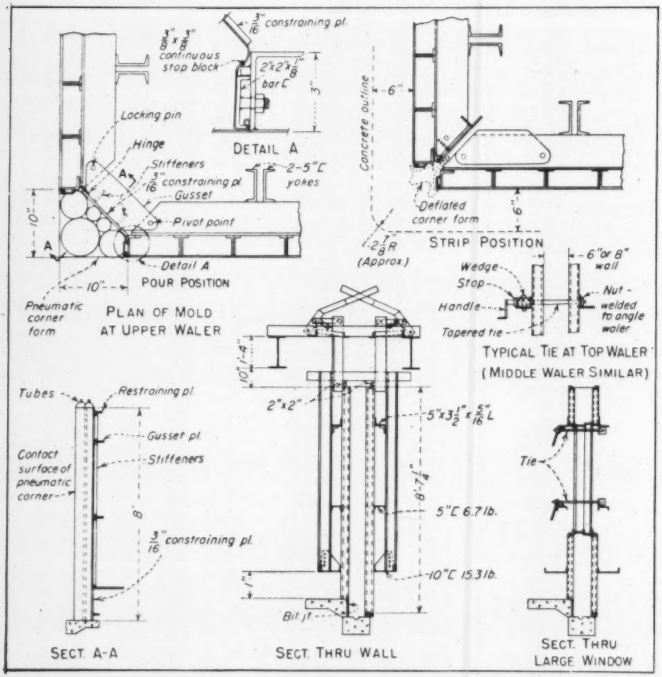
7 A FINISHED HOUSE with steel windows, wood doors, plumbing, wiring and painted concrete inside and out.



WALL DETAILS—Interior wall section is shown at left, exterior wall section at right.



FLOOR PLAN of one of the two attached houses forming a building.



FORM DETAILS, including that of the pneumatic corner form and various ties.

tion to fractions of an inch. A spotter stationed in a crow's nest on the projecting arm of the crane guides the operation. He is equipped with a field telephone for communicating with the crane operator, who is stationed nearly 80 ft. away at the crane control.

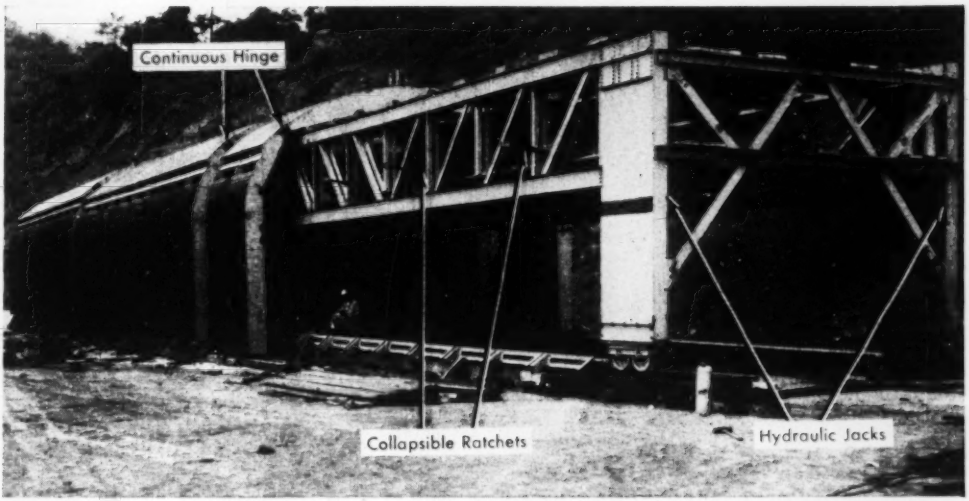
The house is ready to be painted inside and out as soon as the forms are stripped, since walls and ceilings have a smooth finish when removed from the forms. Electric wiring is placed in exposed raceways. Thus, Ibec has been able to reduce the cost of finishing its houses to a minimum.

Designers and builders

The Norfolk project is being erected under an agreement between the city and Henry Clay Hofheimer II that stipulates that rents will not exceed $45 per month. The construction methods used were developed by Architect Wallace K. Harrison, chairman of the board of Ibec. Plans for the project were worked out with Mr. Hofheimer by George A. Dudley, president of Ibec Housing Corp., which is an affiliate of International Basic Economy Corp., headed by Nelson A. Rockefeller. William V. Reed, vice president of Ibec, is in charge of the project, and T. D. FitzGibbon is the architect.

Experimental work was carried out with the cooperation of Roger and Louis Corbetta, of the Corbetta Construction Co., who are in charge of construction for Ibec. Engineering was developed by Emil H. Praeger, of Madigan & Hyland.

Charles L. Kaufman and Lawrence M. Cox, chairman and executive director, respectively, of the Norfolk Redevelopment and Housing Authority, assisted in working out details of the project.



HINGED FOR FOLDING—Steel tunnel-lining forms are lowered and collapsed by custom-built gantry traveler. Corner posts of gantry each have sets of four hydraulic jacks inside and telescope to raise and lower forms. Ratchets swing in the sidewalls.

Collapsible Lining Forms Telescope Through Squirrel Hill Tunnel

CUSTOM-BUILT steel tunnel-lining forms and a special gantry for handling them are moving westward through the north bore of the twin-tube Squirrel Hill Tunnel on Penn-Lincoln Parkway at Pittsburgh, Pa. The all-welded, 50-ft. lengths of lining form collapse on hinges above their springline for telescoping ahead. Fifty feet of arch roof and sidewalls can be poured each day.

Concreting began on the north tube Sept. 15—the day it was holed through near its west end. This tunnel is 3,785 ft. long, and the south—60 ft away—is 3,895 ft., both in rock. Altogether, 7,680 ft. of tunnel must be lined using the collapsible steel forms. A short length of cut-and-cover work completes the tunnel's 4,225-ft. portal-to-portal length.

With the north tube lined, the concreting operation will double back, to work west-to-east through the south tube. Each tube will have a 24-ft. roadway and a 2-ft. 7½-in. service walk. Two 90x90-ft. structures—one at each portal—will house ventilating, control and service equipment.

Tunnel lining forms built for the job permit pouring of walls and roof arch at the same time. They also provide for keying the 6-in. concrete ceiling that will span 29 ft. 4 in. from wall to wall just above the arch springline, 14 ft. up from the roadway.

All three sections of lining form are identical. Five lines of grout holes at 10-ft. centers permit pneumatic placement of concrete through 2-in. pipe. One line runs along each wall; three are in the roof. Six lines of 18x24-in. doors—two in the roof and two in each wall—allow for vibration and inspection of concrete each 5 ft. in the roof and 10 ft. along the walls. Also, there are cleanout doors near the wall bases.

A line of stripping jacks at 5-ft. centers is placed along each wall about 3 ft. up from its base, to break the bond with the forms after the concrete has set.

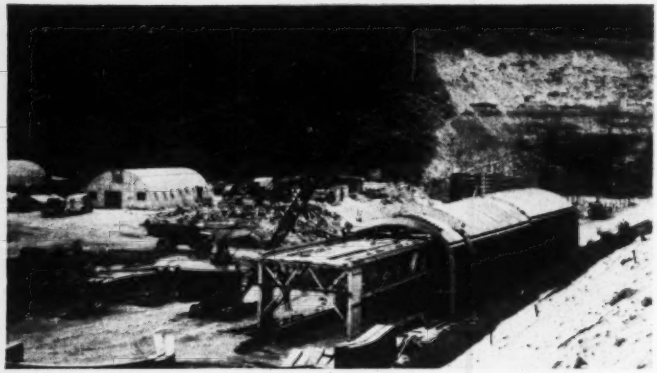
Positioning forms

Concrete footers running along either side of the tunnel support the form sidewalls—and prevent their kicking in as concrete is placed behind them. Steel wedges are used for positioning the forms, and 1¼-in. anchor bolts, embedded at 45 deg. in the footers, hold the forms horizontally at their rib points.

Moving forms forward

In the concreting procedure, form section 1 is anchored in place and bulkheaded at its forward end. Concrete is poured. After initial set, the forward bulkhead is removed and section 2 is pulled through in its collapsed shape to be set up forward of section 1 and end-bolted to it. After bulkheading section 2 forward, concrete is poured. Section 3, collapsed, is pulled through and set up. The concreting thus can be continued in 50-ft. lengths as forms squeeze under and ahead of each other.

Necessary piece of equipment to this operation is the traveling gantry. After a form section is broken away, ready to move, the frame supports it as ratchets mounted along the frame collapse the form sidewalls; hinges just above springline on each wall permit the sides to swing inward. Simultaneously, hydraulic jacks built into the traveler lower the form so that it will pass through the one ahead. Jacks are in sets of four at the corners of the traveler. The jacking and collapsing



THREE IDENTICAL SECTIONS of form were built at the east portal of Squirrel Hill Tunnel and are now progressing through the north tube as concreting hits a 50-ft. per day schedule. Forms have openings for concreting, vibrating and inspection—also provision for keying in ceiling slab. (Blaw-Knox Photos)

procedure is reversed in setting up the form in its new position.

The crane rides on rails with a 19-ft. gage. Forms are 29 ft. 4 in. across and 20 ft. 10 in. high. Forms similar in operation, also used in 50-ft. lengths for the tunnel ceiling, will be handled on another gantry using the same 19-ft.-gage traveler rails.

Blaw-Knox Co. designed and fabricated both the collapsible forms and the traveling cranes for this job. Those responsible for the special design include: L. J. Sarosdy, chief engineer, and J. D. Jessen, assistant chief engineer.

Louis Capone is project manager for B. Perini & Sons, Inc., tunnel contractor. E. D. Phinney is project engineer; Attilio Soma, concrete superintendent; and R. E. Bradley, design engineer. G. E. Riley is resident engineer for the Pennsylvania Department of Highways.

Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phrases of Construction Contracts (McGraw-Hill)

When Engineer's Findings Are Binding on Contractor

Where the contract provides that the engineer shall determine the classification and the amount of work done, such determination is binding upon the parties, in the absence of fraud or such gross mistake as would imply bad faith on the part of such engineer or where the engineer has misconstrued the contract.

This rule applies even though the contract does not in express terms provide that the decisions of the engineer shall be final and conclusive, if it is to be necessarily implied that such is the case.

In the case of Massman Construction Co. versus Lake Lotawana Assn.,[1] stipulation in the contract that payments shall be made only upon the certificate of the engineer was held to be equivalent to providing that the decisions of the engineer are conclusive. (Massman Const. Co. v. Lake Lotawana Assn., 210 S. W. 2d 398, Kansas City Court of Appeals, Missouri, Feb. 9, 1948).

The contract was for the doing of certain excavation work and provided that it shall be the duty of the engineer to make such measurements as will determine payments to be made to the contractor and that the engineer shall make a final estimate of the work and the contractor will be paid the entire sum so found due. The court held that the use of this language was equivalent to a contract provision to the effect that the estimate of the engineer shall be binding and conclusive on the parties.

The contract price for rock excavation was greater than that for shale, and the action was brought to recover the difference in the prices for excavation that the engineer had classified as shale, but which the contractor claimed should have been classified as rock because it could be removed only by blasting.

The engineer testified that in his opinion the excavated material was shale and had been so classified in the progress estimates; also that he did not object to the contractor resorting to blasting to remove the material—as long as it accomplished the desired result. The court held that under these circumstances, the determination as to the classification of the excavated material by the engineer was conclusive upon the contractor.

(1) Massman Const. Co. v. Lake Lotawana Assn., 210 S.W. 2d 398, Kansas City Court of Appeals, Missouri, Feb. 9, 1948.

Guaranty of a Contract

Where a surety bond is given to secure the complete performance of a construction contract and the contractor defaults in performance, the owner, upon the failure or refusal of the surety to complete the work may complete it himself and charge the surety with the cost of completing performance. Where the work is not completed by the owner, he may recover from the surety the fair sum that will be required to complete the work.[1]

"In fixing compensation for damage resulting from breach of a contract the general rule is that the injured party should be placed in the same position as if there had been no breach. The object of the law is to place such party in as good position as if the contract had been kept. In the instant case the bond guaranteed the completion of the building; if there had been no breach of the obligation of the bond, the building would have been erected. Since this was not done, the plaintiff can only be put in as good position as if the contract had been carried out by giving her the cost of construction, not exceeding, of course, the amount of the bond. The measure of damage on a bond guaranteeing completion is the cost of completion: . . . And in a case such as this, where the work was never begun, this cost will be the whole cost of construction.[2]"

Where a contractor submits plans and specifications as to how the work is to be done and guarantees a specific result, he will be held to such guaranty and cannot recover money alleged to be due under the contract where the specific result is not accomplished.[3]

(1) Pennsylvania R. R. Co. v. Fidelity and Deposit Co. of Maryland, 81 F 2d 526.
(2) Trainor Co. v. Aetna Casualty & Surety Co., U. S. 47, 78L. ed. 162, 165, United States Supreme Court.
(3) Biggs v. Densmore, 80 N.E. 2d 38.

Air Cools Aggregate for Nebraska Dam

John R. Hightower
Heat Engineering Consultant
Omaha, Neb.

AIR CONDITIONING has been given a new role—it now cools aggregate to reduce shrinkage cracks in mass concrete. At Harlan County Dam, refrigerated air is circulated through the concrete's aggregate bins to cool four sizes of stone. Thus, concrete temperatures are held to less than 65 deg. at the forms during summer placement. With simple changes the system heats the aggregates for winter.

Harlan County Dam is a Corps of Engineers flood-control and irrigation project now under construction on the Republican River near Alma, Neb. Near the center of its 12,000-ft. rolled-fill embankment is a 1,350-ft. spillway involving 430,000 cu. yd. of concrete. It was for this that the entirely new system of concrete temperature control was developed.

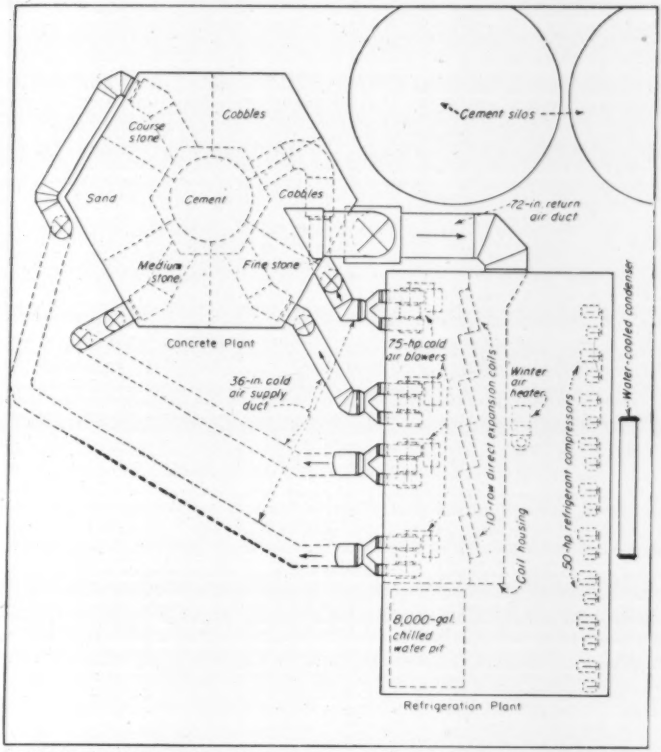
Specifications state that ". . . whatever concrete is placed shall at all times be controlled to a maximum of 65 deg. F and to as much lower than 65 deg. but still more than 50 deg. as the maximum capacity of the (refrigeration) plant provided by the contractor at the site will permit". To meet this requirement, Harlan Construction Co., the dam contractor studied current methods of cooling the mix: with ice, or by inundation of aggregate. Objections to ice centered on the limited quantity that could be added to the mix due to the small amount of water called for (Table I). In hot summer periods this might have increased the mixing time. Inundation might have complicated the control of moisture. So air cooling of aggregate, supplemented by chilled mixing water was investigated.

Air circulates in bins

The basic system developed is a multiple-unit air conditioning plant that cools a large volume of air to freezing temperature, then circulates it through the aggregate in the batching bins over the mixing plant.

Advantages of this method are:

(1) Cooling is not limited by the quantity of mixing water.
(2) It does not increase the moisture carried by the aggregate.
(3) Some 65 percent of the mass of the mix is cooled below placement temperature—and it is done at the final stage of aggregate handling.
(4) The mix cools gradually because the stone absorbs heat slowly.
(5) The process is flexible. Air temperature can be varied down to 30 deg., and air volume can be regulated by damper and by fan speed.
(6) Standard commercial refrigeration units, for which spare parts are easily obtained, are operated in parallel for flexibility.
(7) With "modulated control" of air temperature by means of the refrigerant demand, units are dropped off or added to the line automatically by electric relays.
(8) Push-button control makes operation simple.



LAYOUT OF COOLING PLANT—Compressors, expansion coils, blowers and water chillers are housed in one compact 32 x 60-ft. building.

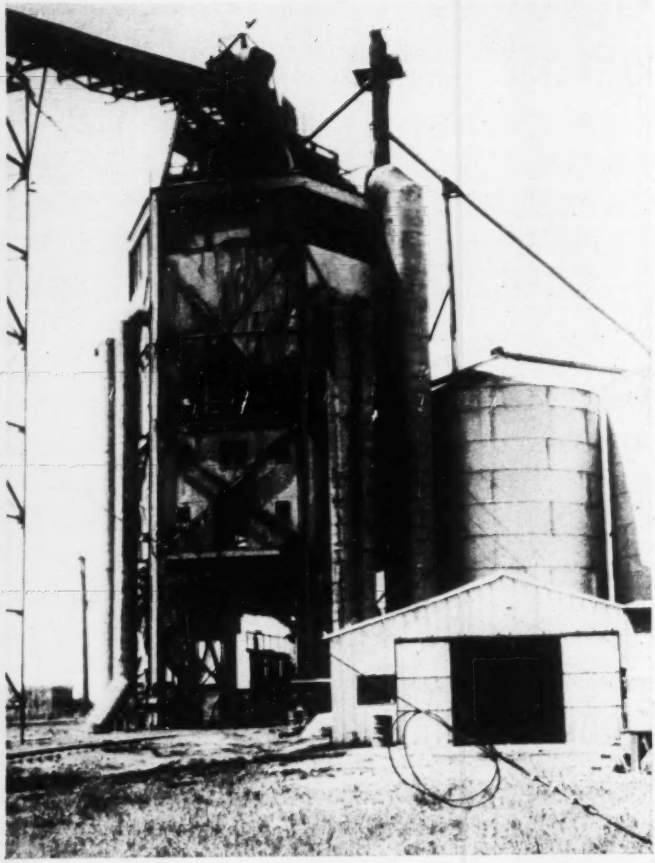
TABLE I—HARLAN COUNTY DAM CONCRETE

Quantities (lb.) for 4-cu. yd. Typical Batch

Cement	1,128
Sand	3,800
¾-in. max. stone	2,300
1½-in. max. stone	2,700
3-in. max. stone	3,300
6-in. max. stone	3,200
Water	670
Air-entraining agent	2¼

In the other direction—aggregate heating—the set-up has also proved successful. In cold weather the refrigerating units are cut out, and warm air from two farm-type corn dehydrators is blown through the aggregate bins to allow winter concreting to continue without the usual steam heat. Each dryer gives 750,000 b.t.u. per hr.

Design of the plant posed certain questions that could only be answered by a study of actual operations. Accordingly, a model plant was erected at the damsite, and information secured from various pilot runs. Tests



LATEST THING in concrete plants is this air-conditioned one at Harlan County Dam. Large air-circulation ducts set it apart as unique.

were made in a 3-ft. slice through a prototype batcher bin, using limestone aggregate graded to specification sizes. From these it was determined that:

(1) Aggregate could be cooled 35 deg. in 45 min. with a circulated air temperature differential of 60 deg.

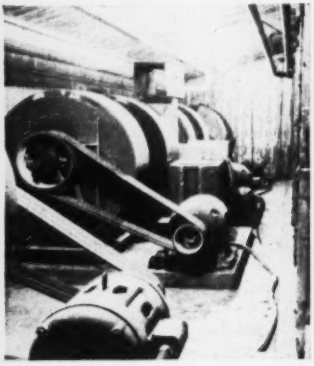
(2) The best method of air injection was through a restricted port or nozzle at the base of the bin, with spent air collected at the top, rather than injection through a vertical slot and collection with a vertical draft stack in the bin.

(3) The principle of counterflow—injecting cooled air into cooled aggregate and drawing it up through warmer stone as it became warmer—was a great aid in dispersing air.

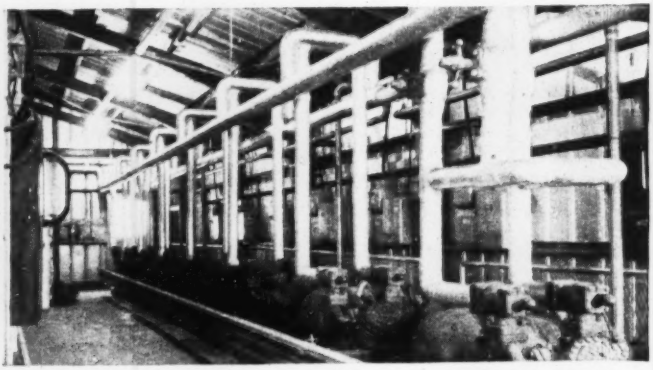
(4) Aggregate particles tended to short circuit, or fall through the bin in a shorter time than the mass movement of the aggregates, due to coning action over the discharge gate. To overcome this, the planned capacity of the full-scale plant bins was upped from 500 to 750 tons, and each stone bin was divided so one half could be drawn down while the other cooled.

Detailed refrigeration information to aid the mechanical design of the plant was also obtained. However, not all questions were answered (such as that of required blower capacity) so extra horsepower was added to provide a safety factor. Table II shows the design basis for the plant installed, as determined by tests on the model. Actual operation indicates that the factor of relative humidity should be more closely controlled.

The air cooling apparatus consists of: nine 50-hp. reciprocating Freon-12 compressors having a total rated capacity of 470 tons with 30-deg. suction temperature and 102-deg. condensing temperature; and an evaporator bank of 24 ten-row direct ex-



NINE COMPRESSORS get refrigerant ready for use within the plant.



SIX-SECTION bank of direct expansion coils (containing 24 ten-row direct expansion cooling coils) has a total face area of 360 sq. ft.

TABLE II—COOLING PLANT DESIGN *

Temperatures (deg. F.) of Ingredients for 57-deg. Concrete

Material	Cement	Sand	Stone	Water
Original temperature	125	90	90	60
Batching temperature	125	90	50	33
Temperature drop	0	0	40	27

Cooling Requirements For Concrete Production of 175 cu. yd. per hr.

Cool 502,250 lb. of stone 40 deg. (specific heat 0.2)	4,018,000 B.t.u./hr.
System loss of 10 percent	401,800 B.t.u./hr.
Cool 35,000 lb. of water 27 deg.	945,000 B.t.u./hr.
Loss through blowers (2½-deg. temperature rise)	382,750 B.t.u./hr.
Water pumping	25,500 B.t.u./hr.
Total peak load	5,773,050 B.t.u./hr.

Cooling Plant Capacity

470 tons of refrigeration	5,625,000 B.t.u./hr.
Stored refrigeration (ice on water-chilling plates)	275,000 B.t.u./hr.
Total peak capacity	5,900,000 B.t.u./hr.

Plant input of 534 kw. = 1,822,500 B.t.u./hr.
Coefficient of performance = 3.2

* Based on results of pilot plant tests.

pansion cooling coils with a total face area of 360 sq. ft. Units are housed in a 32 x 60-ft. building at the base of the mixing plant.

The expansion coils are in a 17 x 45-ft. insulated room in the building. Here, too, are four straight-vane pressure blowers that draw air through the refrigeration coils and force it to the aggregate storage bins.

Air supply ducts are 36-in. dia. corrugated culvert pipes that lead from each fan to one of the four stone bins atop the concrete plant. The cold air is admitted to the bottom of the bins through louvered openings, and circulates upward through the aggregate. A roof, 18 in. above the tops of the dividing partitions between bins, forms a common plenum chamber. From a dormer in the plenum roof, a 72-in. duct takes spent air and returns it to the plant ahead of the expansion coils to complete the closed cycle.

Only the air supply ducts and the bottoms of the aggregate bins are insulated.

Water chilling system

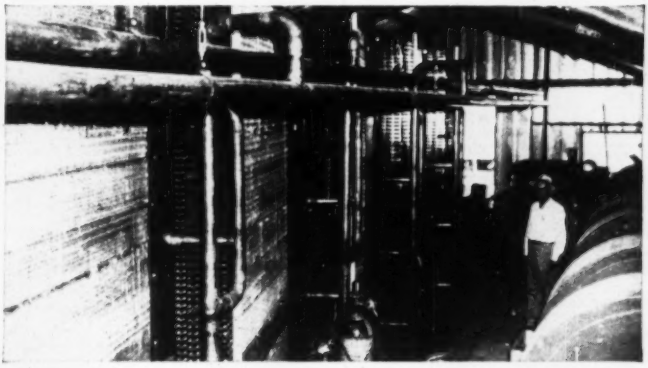
A unique economy feature of the refrigeration set-up is a mixing-water chilling system that acts as a flywheel for the over-all cooling operation by idling on the line. The system has 60 3 x 10-ft. plate evaporators in an 8,000-gal. insulated concrete pit in the refrigerator building. Liquid and suction lines to the plates are connected to those of the air-cooling coils. If batching plant operations are intermittent, the water chiller stores ice.

Normally the plates just cool mixing water to 33 deg. for circulation to the concrete plant's water batcher. But during periods of low load on the aggregate cooling plant, or when it is inoperative, the plates make and store up to 30,000 lb. of sheet ice. This will produce 22,000 gal. of 33-deg. mixing water when 60-deg. tap water is circulated between the plates enough for 8 hr. of concrete production.

Harlan County Dam's air cooling and heating system has completed a successful year. Already 180,000 cu. yd. of concrete have been mixed and poured in weather ranging from 35 deg. to 104 deg., with the concrete held between the specified 65-deg. maximum and the minimum as it was dumped into the forms.

Harlan Construction Co. (a combination of: Guy F. Atkinson Co.; Bressi & Bevanda Constructors, Inc.; David G. Gordon; Chas L. Harney, Inc.; W. E. Kier Construction Co.; A. Teichert & Son, Inc.; and Trepte Construction Co.) of Alma, Neb., holds a $20,000,000 contract for completion of Harlan County Dam. Robert W. Atkinson is project manager, John Kier is associate project manager and Hugh W. Parker is chief engineer. The project is under the direction of the Kansas City District, Corps of Engineers, Col. Paul D. Berrigan district engineer. At the damsite, Capt. Gordon A. Schraeder is area engineer and B. V. Reany is project engineer.

The writer, in cooperation with Harlan Construction Co., developed the described "Tower" system of aggregate temperature control, on which patents are pending. The help of Hugh Parker, Hazen Showers (his assistant) and W. A. Kettlewell (project manager at the time) was invaluable. The Corps of Engineers under C. H. Wagner (former resident engineer) gave great assistance in pilot plant operation.



FOUR DOUBLE BLOWERS of straight-vane, pressure type, draw air through refrigeration coils and force it to aggregate storage bins.

CORN DRYER heats air to bring aggregate up to requirements for winter work.

Conclusions From Pavement Study Found Lacking Full Support

Peter C. Hyzer
Lieutenant Colonel, Corps of Engineers
Department of the Army

NORMAN W. McLEOD and his associates are to be commended for their studies on flexible pavements made for the Canadian Department of Transport, which were summarized by Dr. McLeod in the April 28, May 12 and 26, and June 9 issues of ENGINEERING NEWS-RECORD. It is the opinion of this writer, however, that some of Dr McLeod's conclusions concerning this most controversial subject are based upon an inadequate foundation to support his bold claims.

At the Massachusetts Institute of Technology, under the guidance of Prof. Donald W. Taylor, the writer recently completed a thesis entitled "An Analysis of Methods of Design of Flexible Pavements." This analysis included both the method of the Canadian Department of Transport, presented by Dr. McLeod in the articles noted above, and the CBR method used by the Corps of Engineers, U. S. Army, which he criticizes. In the early stages of that study the writer has the definite impression that the Corps of Engineers was over-conservative and that the Canadian method, based upon a cursory reading of Dr. McLeod's earlier paper before the Highway Research Board, had considerable merit.

The writer has had no previous connection with the development or use of the Army method, and an effort was made to remain impartial and unbiased. Realizing that many readers would not have the time to study and analyze Dr. McLeod's conclusions, the writer feels impelled to publish his findings as the result of his considerable study of the subject.

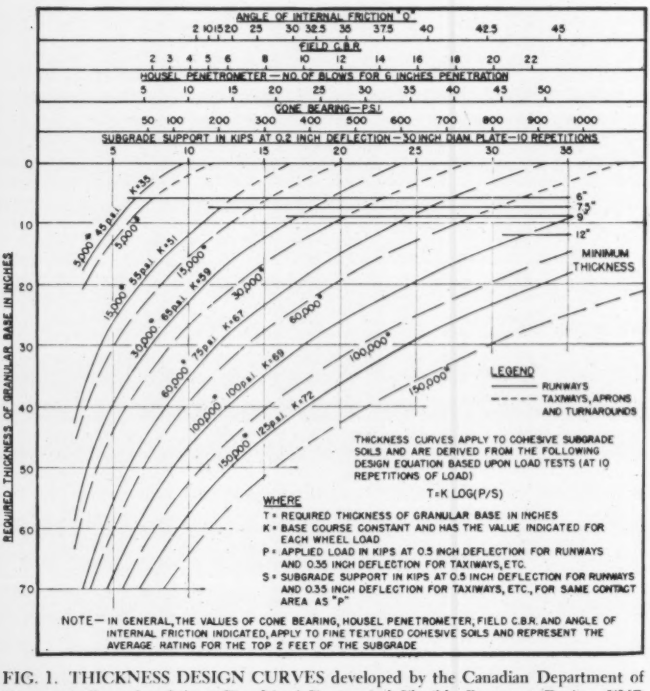

ANGLE OF INTERNAL FRICTION "Ø"
FIELD C.B.R.
HOUSEL PENETROMETER — NO. OF BLOWS FOR 6 INCHES PENETRATION
CONE BEARING — P.S.I.
SUBGRADE SUPPORT IN KIPS AT 0.2 INCH DEFLECTION — 30 INCH DIAM. PLATE — 10 REPETITIONS
REQUIRED THICKNESS OF GRANULAR BASE IN INCHES
MINIMUM THICKNESS
LEGEND
RUNWAYS
TAXIWAYS, APRONS AND TURNAROUNDS
THICKNESS CURVES APPLY TO COHESIVE SUBGRADE SOILS AND ARE DERIVED FROM THE FOLLOWING DESIGN EQUATION BASED UPON LOAD TESTS (AT 10 REPETITIONS OF LOAD)
T=K LOG(P/S)
WHERE
T = REQUIRED THICKNESS OF GRANULAR BASE IN INCHES
K = BASE COURSE CONSTANT AND HAS THE VALUE INDICATED FOR EACH WHEEL LOAD
P = APPLIED LOAD IN KIPS AT 0.5 INCH DEFLECTION FOR RUNWAYS AND 0.35 INCH DEFLECTION FOR TAXIWAYS, ETC.
S = SUBGRADE SUPPORT IN KIPS AT 0.5 INCH DEFLECTION FOR RUNWAYS AND 0.35 INCH DEFLECTION FOR TAXIWAYS, ETC., FOR SAME CONTACT AREA AS "P"
NOTE — IN GENERAL, THE VALUES OF CONE BEARING, HOUSEL PENETROMETER, FIELD C.B.R. AND ANGLE OF INTERNAL FRICTION INDICATED, APPLY TO FINE TEXTURED COHESIVE SOILS AND REPRESENT THE AVERAGE RATING FOR THE TOP 2 FEET OF THE SUBGRADE

FIG. 1. THICKNESS DESIGN CURVES developed by the Canadian Department of Transport (Reproduced from Fig. 36 of Economical Flexible Pavement Design, ENR June 9, 1949, p. 76).

The CBR method

The Corps of Engineers readily admitted its conservatism in its Manual on Flexible Pavement Design and in papers contributed to the ASCE symposium on the same subject, but retains the CBR method until intensive study can provide a better solution. Before this method was adopted all existing design methods were studied, including plate bearing tests, and the CBR method was adopted and is retained for the following reasons:

(1) It is supported by a wide background of practical experience.

(2) It is applicable to a wide range of materials.

(3) The equipment used in the test is light and mobile.

(4) The test can be used in the field and laboratory for correlation, design, evaluation, and construction control purposes. The CBR test measures the resistance of the soil to shear deformation. Consolidation failure is prevented by compaction requirements.

It should be noted that the curves used by Dr. McLeod for comparison are those developed during the war. They were purposely conservative to provide some flexibility, since the future weights of planes in any given classification were not then known.

Based upon study and experience the decision has recently been made by the Chief of Engineers, as yet unpublished, to reduce the thicknesses required for runway ends, taxiways and aprons to the corresponding value for runways on the design curves, Fig. 2. The thickness of the center portion of runways will probably be reduced to correspond to that now required for a load of about 80 percent of the design load.

Dr. McLeod's form of presentation has a misleading effect. His Table I, which is reproduced here as Table I, is an example. Only close study here discloses that his Corps of Engineer rating is for wheel load, while his

traffic data is for weight of aircraft. This has the effect of doubling the comparison in his favor, for the 64,000-lb. plane has a wheel load of only 32,000-lb.

The McLeod presentation of CBR data is particularly misleading. His comparisons are based on "undisturbed" samples, although all conclusions are for field conditions. His soaked tests are not described, but these too are on "undisturbed" samples, which can hardly be compared with the compacted samples used by the Corps of Engineers in its designs. Moreover any comparison is virtually worthless unless a detailed description of the test procedure is given.

It should be noted in particular that the McLeod CBR data is given only for the weak clay subgrades. Soaked CBR values ranged from 2 to 4.6. The average CBR value of subgrades under all U. S. airfields is 15 and fewer than 5 percent have CBR values of 5 or below. In other words, a few tests on 11 airfields with subgrades representing the weakest 5 percent of U. S. soils is broadly used as applicable to all subgrade soils. True, he uses his Fig. 30 (ENR May 26, p. 52) to show that the data for plate bearing tests on Uplands airport sandy subgrade ties in with the clay subgrades, but no comparative CBR data is given.

Subgrade strength

Also misleading is the McLeod repeated reference to the "supporting value of the subgrade". Although such wording might imply a true value, it is actually the value obtained from plate bearing tests. It is further implied that this value is a true indication of the capacity to support traffic. How can the strength of a subgrade, as it applies to flexible pavement design, be measured? Thus far soil mechanics has not provided a rational answer. Of all the principal methods in current use, however, Dr. McLeod's contention that the subgrade support for runways as measured by the load on a rigid plate, giving 0.5 in deflection in 10 repetitions, has the least convincing mass of empirical data to support it.

Why Dr. McLeod uses plate bearing tests as his basis is not known, for they were discarded long ago by the Corps of Engineers. They require the greatest time, effort and equipment of all currently used tests, and allowable deflections are generally based on unproved assumptions without any volume of supporting data. It is not possible to differentiate between consolidation and elastic and plastic deformation; thus the resistance to shear deformation, considered the most important cause of failure, is not disclosed. The effects of moisture changes and stress repetitions cannot be easily duplicated or evaluated by the plate bearing method of test.

In a recent letter to the writer from Lt. Col. Ralph King, director of the Waterways Experiment Station of the Corps of Engineers, he stated: "After considerable study the Flexible Pavement Laboratory has not been able to correlate plate bearing results with carrying capacity".

The Corps of Engineers study of accelerated traffic test data, where static and moving tire loads should be much more representative of actual conditions than rigid circular steel plates, showed that allowable deflections varied considerably with conditions. The Marietta, Barksdale, and Stockton No. 1 traffic tests for example, gave allowable deflections varying from 0.05-in. at a thickness of ten inches to 0.24-in. at a thickness of 50 in.

Dr. McLeod contends that thicknesses of one-third to four-fifths of Corps of Engineers requirements are sufficient. As a test of this contention, comparisons are given below of actual designs on a typical American soil. A recent account of field compaction tests made at the Waterways Experiment Station (Technical Memorandum 3-271), using different kinds of construction equipment on a clayey sand subgrade, give data which may be compared. In-place CBR tests were made and are used to develop a design by the Department of Transport method. Soaked CBR values were also obtained on samples laboratory, thus providing the usual data for Corps of Engineers design. Using the design curves given in Fig. 1 and 2 the tabulation of Table II is obtained, for a wheel load of 150,000 lb.

For this typical soil, Canadian runway thicknesses range from 80 to 103 percent, with an average of 90 percent, of the Corps of Engineer requirements, rather than the one-third to four-fifths obtained for the unusual conditions described by Dr. McLeod. Taxiway thicknesses obtained by the

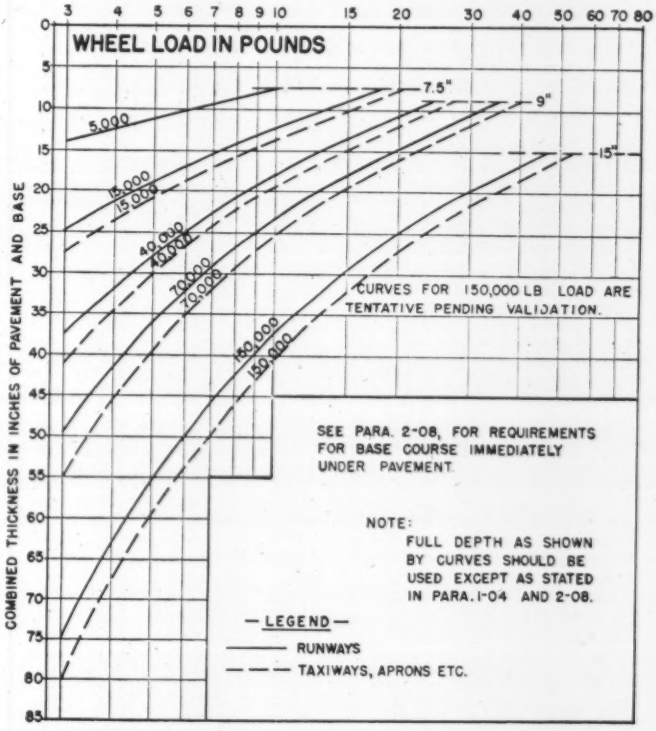

WHEEL LOAD IN POUNDS
3 4 5 6 7 8 9 10 15 20 30 40 50 60 70 80
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85
COMBINED THICKNESS IN INCHES OF PAVEMENT AND BASE
5,000
7.5"
9"
15"
15,000
15,000
40,000
40,000
70,000
70,000
150,000
150,000
CURVES FOR 150,000 LB LOAD ARE TENTATIVE PENDING VALIDATION.
SEE PARA. 2-08, FOR REQUIREMENTS FOR BASE COURSE IMMEDIATELY UNDER PAVEMENT.
NOTE:
FULL DEPTH AS SHOWN BY CURVES SHOULD BE USED EXCEPT AS STATED IN PARA. 1-04 AND 2-08.
— LEGEND —
RUNWAYS
TAXIWAYS, APRONS ETC.

FIG. 2. DESIGN CURVES for determining the thickness of pavements and bases developed by the Corps of Engineers, U. S. Army (Reproduced from the Engineering Manual, Part XII, Chapter 2).

two methods are almost exactly equal. If the new criterion to be used by the Corps of Engineers is made the basis of comparison, runway thicknesses would be the same for the two methods and the Canadian method would require an 8 percent greater taxiway thickness than that required by the Corps of Engineers.

Carrying the comparison farther, Dr. McLeod's data (ENR, May 26, p. 49) indicate that field CBR values overestimate the improvement due to compaction as compared to his plate bearing tests. If his plate bearing tests are to be considered a more accurate index, the thicknesses obtained by his method shown in Table II should be further increased by perhaps 20 percent.

Field moisture studies

The Department of Transport studies on field moisture are good, but the data obtained do not appear to support the conclusion that the Corps of Engineers is wrong in its use of soaked samples. The Corps of Engineers readily admits that the method is conservative and arbitrary, but no better method has been produced to represent the anticipated worst condition. In arid regions, certain conditions allow a 20 percent reduction in thickness to account for the favorable climatic conditions.

Dr. McLeod states (1) that the number of locations showing over 90 percent saturation were relatively few, yet his Fig. 5 (ENR, Apr. 28, p. 45) shows that all of the fields listed had such locations. For all of these fields 21.7 percent of the locations tested showed over 90 percent saturation, according to his paper before the Highway Research Board in October 1947. His field evaluations are based on the lower quartile point of subgrade support, and he states in ENR, May 26, "the supporting value of the subgrade should always be determined for the worst condition of moisture content and density expected for it after the pavement has been laid." From this, the lower quartile point of moisture conditions also appears pertinent.

Discounting the Letherbridge field —which is exceptionally dry—the lower quartile point of moisture condition would appear to indicate greater than 90 percent saturation. The Corps of Engineers obtains a degree of saturation between 75 percent and 100 percent, with an average of about 90 percent for the fine grained soils, when samples are soaked for design tests. Contrary to his contention that soaking is not justified, it appears that Dr. McLeod's data confirms this Corps of Engineer practice.

Dr. McLeod's approach to the moisture problem for design, whereby he studies the subgrade under old pavements in the vicinity, is most rational. He does not explain, however, how such moisture and density conditions are correlated with compaction or are reproduced in the actual subgrade under plate bearing or other test.

Economies in initial construction obtained by reducing thickness may be at the expense of high maintenance cost and short life. Although Dr. McLeod does not consider maintenance costs on Canadian fields excessive, he admits to some maintenance, but, due to the uncertain future, doubts the wisdom of the Corps of Engineers criterion of nominal maintenance for 25 years of capacity operation.

The underdesign of principal airports in the past has been the sad general experience. Expansion, if not completely blocked, is at great expense. New civilian airports such as Logan at Boston and Idlewild at New York are being designed for greatly expanded operations much further than 25 years in the future.

Empirical support

Since both methods here under discussion are admittedly empirical it might be well to examine the evidence supporting each. The empiric validity of the CBR method in use by the Corps of Engineers is supported by an impressive array of accelerated traffic tests and performance experience. Carefully controlled accelerated traffic tests have been conducted to at least

TABLE II — COMPARATIVE FLEXIBLE PAVEMENT DESIGN THICKNESSES ON A TYPICAL AIRPORT SUBGRADE
(Compacted clayey sand: 150,000 lb. wheel-load)

Modified AASHO density (Percent)	In place CBR	Soaked CBR	Design Thicknesses (inches) Runways DOT*	Runways CE**	Taxiways DOT	Taxiways CE
92	16	13	29	32	36	34
90	15	10	31	37	37	40
90	13	10	35	37	41	40
92	14	13	33	32	39	35
91	16	11	29	36	36	39
		Average	31.4	34.8	37.8	37.6

* Department of Transport **Corps of Engineers

TABLE I —TRAFFIC DATA FOR MONTREAL, TORONTO, WINNIPEG & LETHBRIDGE AIRPORTS
(Reproduced from Part I of Economical Flexible Pavement Design Developed from Canadian Runway Studies, ENR April 28, 1949, p. 42)

Airport	Overall Thickness Pavement and Base Inches	Average C B R Value Soaked Sub-grade Samples	Wheel-Load Rating U. S. Corps of Engineers Design Curves	Actual Traffic Data To Nearest Full Thousand Number of Operations of Aircraft Weighing More Than 7,500 lb.	15,000 lb.	25,000 lb.	50,000 lb.	64,000 lb.
Montreal	14	3.1	5,000			211,000	89,000	23,600
Toronto	8 to 10	3.5	2,000 (approx.)	299,000	79,000	41,000	3,400	3,000
Winnipeg	8" — 2 rwys 14" — 1 rwy	3.3	2,000 5,000	319,000	96,000	25,000	several hundred	
Lethbridge	6 to 8	4.6	2,000 (approx.)	229,000	35,000	4,400	several hundred	

partial failure on a great variety of subgrades, bases and surfacing, for wheel loads up to 200,000 lb. Performance records of all fields are maintained and all failures are investigated. Flexible pavements have been evaluated at 426 fields and thorough studies made of these fields which: (a) failed contrary to expectation, (b) did not fail although expected to do so, and (c) had an unusually large amount of traffic.

The curves shown in Fig. 2 are still termed tentative and are revised whenever performance records so indicate. The reduction mentioned above is an example of such revision. Comprehensive testing and study is expensive. The Corps of Engineers has had an advantage in this regard which undoubtedly accounts in part for the vast difference in data supporting the CBR method and that supporting others.

Compared to this impressive array, Dr. McLeod boldly states "The load supported on a circular bearing plate of equivalent contact area at 0.5-in. deflection for 10 repetitions appeared to correspond quite well with the maximum aeroplane wheel load that the runways at Canadian airports had been carrying under reasonably intensive traffic, and this has been adopted as the criterion for the design of flexible pavements for runways for capacity operations." Failures are not analyzed, but the implication is that occasional patching or resurfacing has prevented serious failure. On taxiways and aprons, however, distress was so great that pavements were strengthened by additional thicknesses of flexible or rigid surfacing. Instead of using comparative data on adequate and inadequate thicknesses for loads using these pavements, he bases his taxiway design on a theoretical yield point. Originally a deflection of 0.225-in. was the criterion for taxiways, etc., which is given as the average yield point for subgrades. How, with consistency, the shift was made to 0.35-in., the yield point of the pavement, is not clear. The neglect of the available information which pavement failures can provide is a striking weakness in the evidence supporting the McLeod empirical method.

Conclusion

From the foregoing, it must appear that the writer is a blind supporter of the CBR method and has only fault to find with the results obtained by the Department of Transport. Actually this is far from true. The Army method is far from perfect, and charges of over-conservativeness in many of its phases may prove to be well founded.

Perhaps the most impressive feature of the Corps of Engineers publications is the manner in which data are presented and conclusions are drawn. Anyone who has time to study the reports of tests is impressed by the conservativeness of the writing. All Corps of Engineers reports present detailed descriptions of tests and results, and carefully plotted and tabulated data. Conclusions based on these data are fully supported by clearly outlined proof. Results which appear to be conclusive, but are not fully corroborated, are reported only as trends. Pavement failures and weaknesses in design methods are readily admitted and completely described. Such conservative writing lends credence to conclusions.

The purpose of this paper is to point out controversial points which should be weighed in order that the true value of Dr. McLeod's work may be accepted. His moisture and density studies, comparisons of deflections by load, plate area and number of repetitions, and his correlation of test results, are all, undeniably, very important contributions to the fields of soil mechanics and flexible pavement design.

Exception must be taken to his unsupported criticism of others and to the form of presentation of his own conclusions which arises, no doubt, from an understandable enthusiasm for his work and his pride of achievement. Perhaps his greatest achievement has been to get other pavement designers on their toes restudying their methods with a view toward greater economies.

Baseboard Heating Performs Well in NBS Tests

Baseboard heating systems provide a more comfortable environment in dwellings than many of the systems used in the past. This was the conclusion reached by the National Bureau of Standards in its investigation of a typical baseboard heating system as part of its broad program on heat-transfer phenomena in small houses.

Details are given in "A Study of a Baseboard Convector Heating System in a Test Bungalow," by Paul R. Achenbach and Edward M. Tierney, in National Bureau of Standards Building Materials and Structures Report BMS115, available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at 15 cents a copy.

The tests covered the temperature distribution in a four-room bungalow under various outside temperature conditions, in addition to the installation and operational problems involved. The baseboard heating system consisted of lengths of finned 1¼-in. iron pipe under the windows connected by unfinned 1-in. standard pipe and partly inclosed by a perforated sheet-metal cover. The fins were 3¼ in. square and were spaced ¼ in. apart on the pipe. Heat was transferred primarily by convection of air through the enclosure and over the finned surface.

Two types of controls were used for the tests: (1) a conventional wall-type electric thermostat, and (2) a modulating control employing an outside thermostat and a three-way valve that mixed the boiler supply and return water to vary the temperature of the water entering the system.

Temperatures were measured in the test bungalow by means of thermocouples supported by strings attached to the ceiling. The temperature distribution was observed in the bungalow while a temperature of 70 deg. F. was maintained at the 30-in. level for outside air temperatures of 50 deg., 32 deg., 20 deg. and as near 0 deg. F. as could be attained. In addition, the characteristics of the thermostat control system were observed when the outdoor temperature was varied between 0 deg. and 40 deg. F.

Test results showed that comparatively small temperature differences existed between rooms and between different levels in the same room with this type heating system for the range of outside temperature from 50 deg. to 0 deg. F. This system produced lower vertical temperature gradients in the test bungalow than any other system or device that had been tested heretofore. For example, a temperature difference of 8 deg. F. was observed between the 2-in. and 60-in. levels for a gravity hot-water heating system with conventional thin-tube radiators and the boiler in the basement. The difference for the baseboard convector with the same outdoor conditions was 3.5 deg. F.

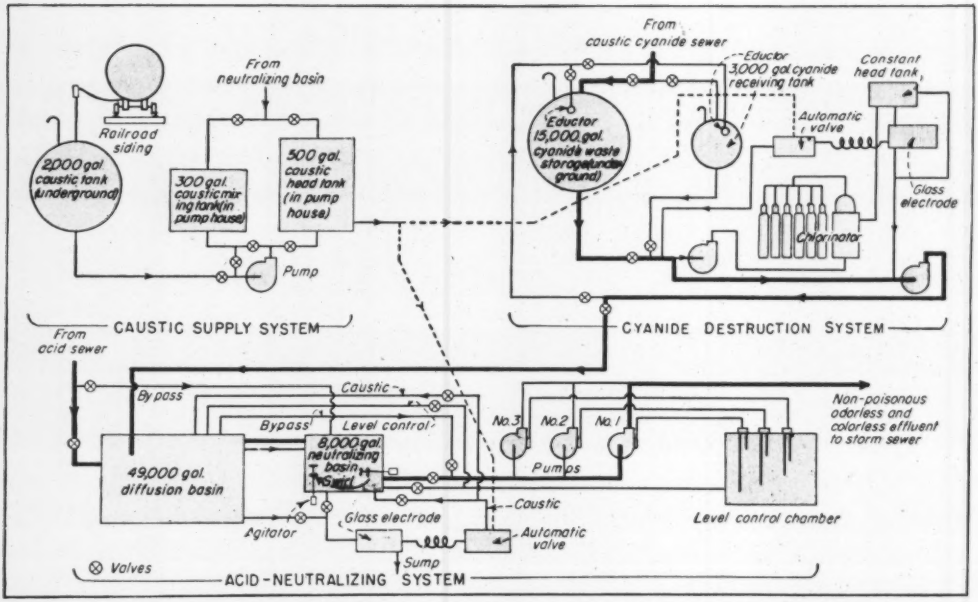


Fig. 1. CYANIDE WASTES destroyed by chlorination are combined with acid products and neutralized by caustic-soda solution. Non-poisonous, odorless and colorless effluent is pumped to the city storm sewer from Western Electric's Allentown (Pa.) plant.

Cyanide Destruction and Acid Neutralizing Prevent Poisonous Stream Pollution

Allen H. Gipson
Engineer
Western Electric Company, Inc.
Allentown, Pa.

CYANIDE AND ACID WASTES from Western Electric's new electronic-components factory at Allentown, Pa. are rendered non-poisonous, colorless and odorless prior to discharge into the Lehigh River. This is done by treatment in a three-stage, semi-automatic, custom-made, 200-gpm. disposal plant, designed and built as an integral part of the overall project.

Three-part treatment (Fig. 1) consists of: Storage, dilution and rate-controlled flow of caustic solution to cyanide-destruction and acid-neutralization systems; cyanide destruction by chlorination; and settling and neutralization of acid wastes by cyanide-free effluent as well as by direct addition of caustic.

The caustic solution, delivered to the treatment plant in tank cars, is stored in a 15,000-gal. cylindrical steel underground tank. Here the 50-percent solution is diluted to 25 percent to prevent crystallization.

Dilute solution is then pumped to a 300-gal. steel mixing tank where it is further cut to eight-percent strength by addition of waste water. Use of the weak solution assures reliable operation of the automatic feed valves in subsequent processing.

After mixing, the weak solution is pumped to a 500-gal. head tank. From this tank, dilute caustic is fed through automatically controlled valves to both the cyanide-destruction and acid-neutralization system.

Cyanide is oxidized

Cyanide wastes from various manufacturing processes are collected in a separate gravity sewer that discharges into a 3,000 gal. underground receiving tank. When the receiving tank is full, its contents are pumped into a 15,000-gal. storage and destruction tank, also underground. When the storage tank is filled (about four times a week), it is chlorinated on a batch basis.

Chlorination involves three steps: First, caustic is added until the wastes have pH 8.5 or higher. Then the recorder-controller is set to maintain a minimum pH of 8.5—which prevents gassing. Addition of chlorine is then started.

With the chlorinator set for about 75 lb. per day, chlorination is continued until 10 ppm. of free chlorine is indicated by an orthotolodine or potassium iodide comparator test. Chlorination is then stopped and a 30-min. reaction period is allowed to pass.

If at the end of this period, free chlorine is still present, a sample of the batch is taken to the plant chemist for a qualitative analysis. When the result is negative, the chemist signs the label of the bottle, indicating approval for discharge.

It is interesting to notice that discharge is by the same unit, utilized to pump wastes into the storage tank and

then operate the eductor to assure good mixing. The only other pump used is that supplying head to operate the chlorinator.

Acid wastes neutralized

Cyanide-free wastes, pumped to the 49,000-gal. reinforced-concrete and acid-proof-brick diffusion and settling basin, partially neutralize acid wastes from plating and other chemical processes, which are collected and delivered by another separate sewer system.

Effluent flows from the diffusion basin over a weir and into an 8,000-gal. neutralizing basin to which sufficient caustic is added automatically from the constant-head storage tank for complete neutralization. The caustic and wastes are thoroughly mixed by constant agitation.

During periods of no flow, it was feared that slight leakage through the automatic caustic valve might carry pH in the neutralizing basin too high. To prevent this, a 1½-in. pipe below the weir permits a continuous light flow of stored acid waste from the diffusion basin to the neutralizing basin.

Treated wastes are pumped from the neutralizing basin to the city storm sewer by three centrifugal pumps. These pumps operate on individual electric circuits, and independently of each other, are turned on and off when water in the neutralizing-basin, level-control chamber reaches their probes.

Probes are set so that the first pump goes on at a 6.67-ft. depth and off at 6.5 ft.; the second at 6.84 and 6.33 ft.; and the third at 7.0 and 6.17 ft. It is interesting to note that the usual first-on, first-off sequence was changed to equalize wear on pumps.

To preclude shutdowns, each unit of the system is equipped with a by-

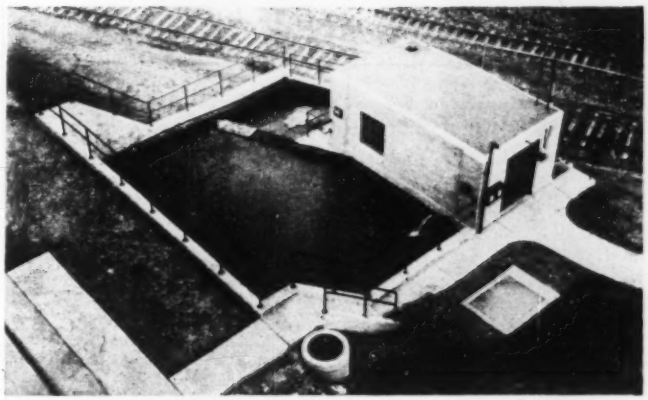


Fig. 2. THE ACID-DIFFUSION and neutralizing basins are lined with acid-proof brick.

pass to an acceptable substitute. The diffusion basin is bypassed by a closing valve in the acid sewer and discharging wastes directly to the neutralizing basin. The neutralizing basin is taken out of service by valving the suction of the three pumps to the diffusion basin. When this is done, caustic is fed directly to the diffusion basin.

The pH automatic control is piped to the diffusion as well as the neutralizing basin to facilitate processing while bypassing either unit.

Piping in the cyanide-destruction system is arranged so that the chlorinating and recirculating pumps can be used interchangeably. Oxidization can be accomplished either with the chlorinator or, although less effectively, by feeding chlorine directly to the receiving tank.

Investigation proved that (for this plant) caustic-soda solution—the highest priced of common alkalies—was the cheapest in total cost. This is true because it is easy to unload from tank cars to underground storage.

Other advantages of this chemical are: It is always available for mixing merely by pumping from storage; is quick of reaction; and leaves no residue to be disposed of.

Records are kept

Plant records are kept to show continuous pH of treated effluent, amount of chlorine added per batch for cyanide destruction, amount of caustic used for acid neutralization and output of each element of the system. In addition to these permanent records, a sample of each cyanide discharge is saved for three months.

Safety was an important consideration in design of the plant. Good piping practice was followed and ample ventilation was provided throughout. Four chlorine gas masks are provided for rescue work. Workmen are required to wear goggles and rubber gauntlets when caustic is being handled.

Although strong emphasis has been placed on first-aid instruction for the plant operators even greater stress is given to the importance of obtaining professional help from the company hospital when accidents occur.

It was anticipated that the system of bypasses and standbys would provide flexibility as well as break-down protection. But during the first year of operation, the bypasses have not been needed and no breakdowns have occurred. Even addition of a third manufacturing shift did not overtax disposal facilities.

The cyanide-destroying and acid-neutralization treatment plant, which cost about $50,000, is entirely effective, trouble-free and economical.

PROCESS EQUIPMENT FOR THE WESTERN ELECTRIC INDUSTRIAL-WASTE TREATMENT PLANT, ALLENTOWN, PA.

Item	Function	Capacity
Chlorinator	Chlorinate CN waste	90 lb. per day
Comparator	Check pH and free chlorine	
Recorder-controller	Control pH of neutralizing basin	
Recorder-controller	Control pH of cyanide tank	
Pump to sewer (1)	Pump to sewer	100 gpm. at 56 ft.
(2)	Pump to sewer	100 gpm. at 56 ft.
(3)	Pump to sewer	200 gpm. at 60 ft.
Agitating pump	Agitate cyanide tank	100 gpm. at 56 ft.
Circulating pump	Operate chlorinator	10 gpm at 70 ft.
Agitators	Agitate neutralizing basin	1 horsepower
Eductors	Agitate cyanide tank	
Level controllers	Start and stop pumps	
Motorized valves	Feed caustic	½ gpm.
Caustic pump	Pump caustic to head tank	20 gpm. at 32 ft.
Sump pump	Return sampling water and wash water to neutralizing basin	50 gpm.

FIELD AND OFFICE

Laterally Unsupported Beams Selected from Table

Some designers may prefer to use the accompanying table, in preference to the AISC handbook, to determine the most economical beam that is not laterally braced. The table is based on the formula given in the AISC code for allowable fiber stress in psi.:

$$f_a = \frac{12{,}000{,}000}{Ld/bt}$$

where L is the unsupported length of beam, d the depth of section, b the width of compression flange and t the thickness of this flange—all in inches.

If M/S, with M the maximum bending moment in inch-pounds and S the section modulus in inches cubed, is substituted for the fiber stress, the equation may be rearranged in a form convenient for use with the table:

$$\frac{ML}{12{,}000{,}000} = \frac{S}{d/bt} = C.$$

C is called the beam criterion and is a function of the beam constants. Its value for a wide range of beams are given in the table that is shown below.

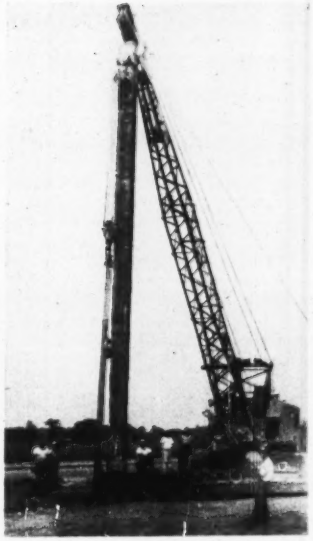
As an example of its use, assume a 24-ft. beam unsupported laterally and carrying a 5,000-lb. load at midspan. The maximum moment in this case is $5{,}000 \times 24 \times 12/4 = 360{,}000$.

$$C = \frac{360{,}000 \times 24 \times 12}{12{,}000{,}000} = 8.64$$

To satisfy this criterion, the following selections may be made from the table: 12 I 35 ($C = 8.72$), 10 WF 29 ($C = 8.75$) and 8 WF 28 ($C = 9.14$).—CHARLES A. MARTIN, *Engineering Dept., Robert Gair Co., Inc., New York, N. Y.*

Pulling Piling

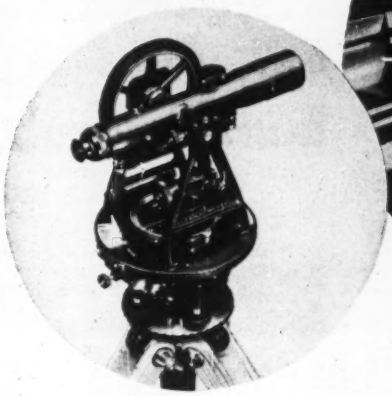
A big contractor who had hundreds of 40-ft. piling to pull out of the ground, used a piece of 18x18-in. timber 44 ft long as a pulling spud. Attaching a 7-sheave tackle to the spud's top, they hooked the tackle through the eye of the piling, set the timber on the adjacent unpulled piling, turned on the power and pulled out the piling—at a rate of one every five minutes. This was on the big Hubbell sewer job in Detroit.—W. K. Crosson, 15324 Heyder Av., Detroit, Mich.



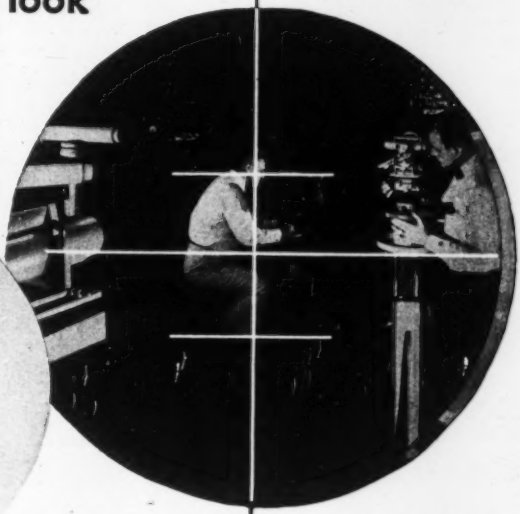
SEVEN-PART TACKLE on 44-ft. timber spud pulls steel sheetpile 40 ft long.

C	Beam	C	Beam	C	Beam	C	Beam
844.0	**36WF300**	98.8	**14WF87**	33.8	**12WF53**	7.03	8M28
736.0	**36WF280**	97.5	30WF116	32.3	14WF58	6.78	**8WF24**
625.0	**36WF260**	96.5	24WF100	31.8	20I75	6.47	10WF25
551.0	**36WF245**	92.6	24I120	30.9	18WF60	6.33	**8M24**
537.0	**36WF240**	89.5	**12WF85**	30.6	21WF62	5.58	10I25.4
482.0	**36WF230**	86.0	**14WF84**	30.5	**10WF49**	5.24	10M25
449.0	**33WF220**	85.4	14WF88	29.6	14WF53	4.62	**10M21**
424.0	**30WF210**	84.8	24I105.9	28.8	20I65.4	4.23	**10WF21**
368.0	**33WF200**	81.5	27WF102	27.5	12WF50	4.16	**8WF20**
347.0	**30WF190**	80.0	30WF108	25.7	18WF55	3.54	8I23
302.0	**27WF177**	78.9	21WF96	24.4	18I70	3.51	12B22
283.0	**30WF172**	77.0	**12WF79**	24.2	**14WF48**	3.16	**12M20**
278.0	36WF194	74.4	**14WF78**	24.0	**10WF45**	3.01	**8I18.4**
267.0	**24WF160**	71.9	24WF94	22.4	**12WF45**	2.89	10B19
247.0	**27WF160**	68.5	18WF85	22.0	14WF50	2.86	**8M17**
243.8	36WF182	66.3	27WF94	21.1	18WF50	2.85	**8WF17**
218.0	**24WF145**	64.1	**12WF72**	20.3	18I54.7	2.66	**6B16**
212.9	**21WF142**	62.4	14WF74	19.35	**14WF43**	2.50	7I90
212.2	36WF170	58.8	14WF78	17.98	**12WF40**	2.46	12B19
204.8	27WF145	57.3	21WF82	17.90	**10WF39**	2.13	**7I15.3**
184.0	36WF160	56.8	18WF77	17.75	14WF45	2.10	10B17
178.8	**14WF119**	56.5	24WF84	15.20	**8WF35**	1.85	6I17.25
177.5	33WF152	53.8	**10WF66**	15.10	12I50	1.81	**8B15**
172.2	21WF127	52.8	20I95	15.00	15I50	1.56	12B16.5
171.4	24WF130	52.7	15WF68	14.18	16WF40	1.48	**10B15**
157.7	36WF150	52.6	**12WF65**	13.45	14WF38	1.45	**6I12.5**
156.0	**14WF111**	51.8	24I100	13.40	15I42.9	1.34	**6B12**
148.6	33WF141	48.7	12WF71	13.32	12WF36	1.28	5I14.75
139.2	18WF114	48.6	20I85	12.90	12I40.8	1.25	8B13
138.4	24WF120	48.0	24I90	12.36	**10WF33**	1.02	**12JR11.8**
136.3	**14WF103**	46.8	18WF70	11.87	**8WF31**	0.94	**5I10**
133.4	21WF112	45.0	**10WF60**	11.20	16WF36	0.67	**4I9.5**
132.3	30WF132	45.0	24I76	10.60	14WF34	0.58	**4I7.7**
120.3	33WF130	44.1	24I79.9	9.90	**12WF31**	0.48	11JR10.3
118.2	18WF105	43.3	21WF73	9.14	**8WF28**	0.41	**3I7.5**
117.4	24WF110	42.7	14WF61	8.75	10WF29	0.39	10JR9.0
115.9	**14WF95**	41.1	**12WF58**	8.72	12I35	0.34	**3I5.7**
115.0	30WF124	39.7	14WF64	8.16	12I31.8	0.29	9JR7.5
102.8	27WF114	39.1	18WF64	7.78	14WF30	0.25	8JR6.5
102.5	14WF96	37.5	21WF68	7.57	**12WF27**	0.19	**7JR5.5**
99.2	18WF96	37.1	**10WF54**	7.08	10I35	0.14	**6JR4.4**

While you're looking through a transit, take a look at what's behind it



Focused on infinity, strategically placed collimators provide the means for precise calibration of assembled Gurley transits.



Double check the divided circles.

Collimating facilities equivalent to those maintained only by the U. S. Coast and Geodetic Survey and the Engineer Research and Development Center, at Fort Belvoir, Virginia, are used to calibrate assembled transits at Gurley. Instruments reading to one second, such as Gurley Theodolites, can be accurately calibrated to a fraction of a second; *and "20-second" transits to approximately one second.*

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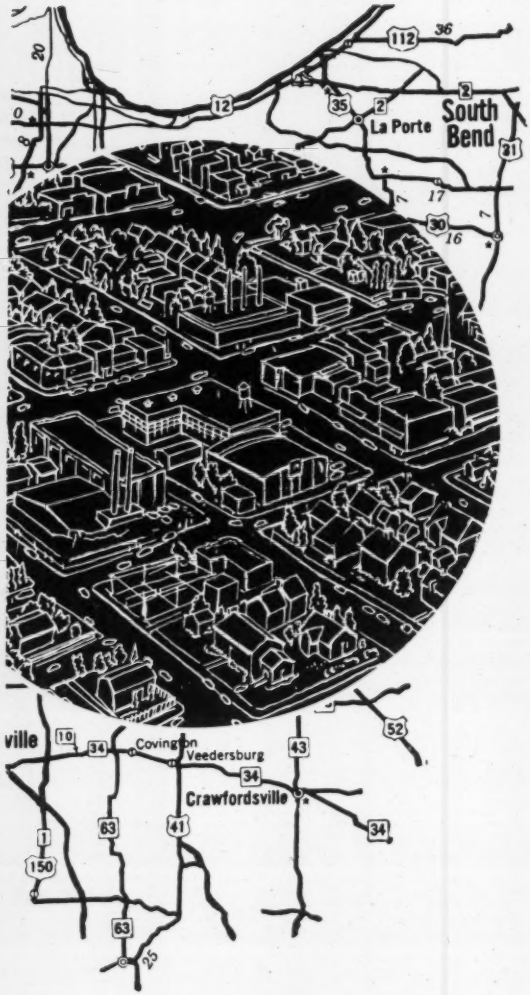

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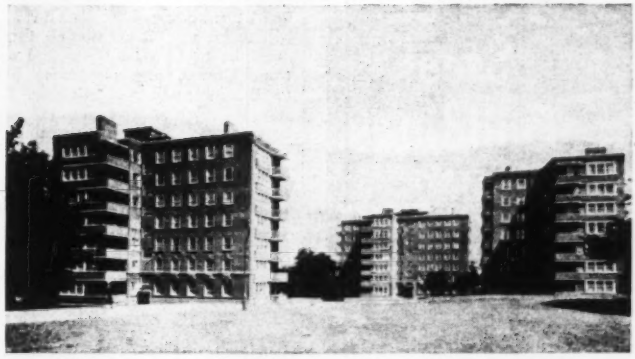

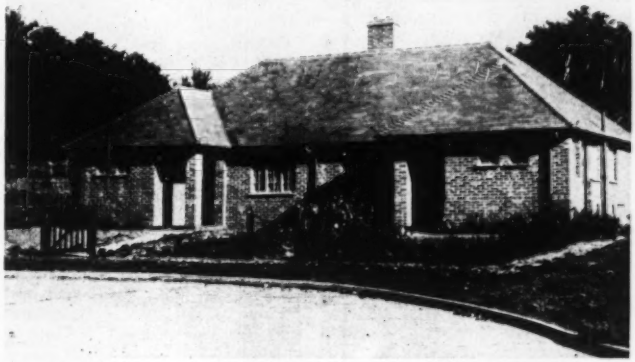

SOLVING BRITAIN'S HOUSING SHORTAGE—Despite the shortage of steel and timber urgently needed for the production of exportable goods, nearly one million new homes have been built in Britain since the end of the war. This has helped to meet the acute housing shortage caused by the war which cost the British some 4½ million damaged or destroyed houses. Built to government specifications, this block of apartments (top) has been completed at Hornsey in the London area. Small bungalow-type houses (bottom) are popular. This semi-detached building is one of many recently completed at Wokingham, Berkshire, about 30 miles from London.

Industrial Capital

Israel—The Export-Import Bank has authorized the establishment of a line of credit of $20 million to the state of Israel to finance purchase in the United States of equipment, materials, and services to contribute to industrial development. Projects already approved cover a wide variety of industries. Since the country is short of exportable raw materials and is not self-sufficient in food, it must develop its manufacturing capacity for domestic consumption and for export. In all of the industrial loans being made there is participation by private banks in Israel.

Public Works

New Zealand—Because of shortages of labor, equipment and materials, less work than anticipated was carried out under New Zealand's National Development Program for 1948-1949. Only about 82 percent of the 1948 authorized borrowing was spent.

Allowing for the devaluation of the pound, estimates for the year ending June 30, 1950, total $100 million, including $26 million for housing, $6 million for schools, $7 million for highway construction, $8 million for railways, and the balance as New Zealand's share in the joint development with Australia of the Christmas Island phosphate deposits.

To the extent that availability of labor and materials permits, work is being pushed ahead on new hydroelectric power stations. Total expenditure on these projects, including transmission, is estimated to reach $18 million. Because of the exchange problems involved, the government has not yet decided whether overseas contractors, other than electrical equipment firms, will be invited to submit bids for part of the work.

Port Facilities

Pakistan—Contract drawings for the first installment of the $28 million (pre-devaluation) development scheme to transform Chittagong, East Pakistan, into a major port, are now being prepared at the London office of Rendel, Palmer and Tritton.

This firm has already submitted to the Pakistan government at Karachi its final blueprint for the relief of shipping congestion in the port by building eight new jetties. It is said that at present, ships wishing to put into Chittagong are sometimes kept waiting for weeks to get a berth. The second stage in the scheme will be to build four additional berths and rehabilitate the four original ones.

Puerto Rico—Preliminary plans for the construction of new port facilities in San Juan have been submitted to the Puerto Rico Planning Board. Jorge J. Jimenez, Commissioner of the Interior, has announced

Following plans prepared by the Frederick Snare Corp. of New York, at a cost of $275,000, this project will create an area of 1,200 acres, at a site on the south-east end of San Juan harbor, from San Juan dry dock to the Army Terminal, for the development of new industries, housing and railroad lines. The harbor improvements to establish the new port will accommodate 26 ships. The project will cost approximately $53,000,000, out of which the U. S. will provide $6,000,000 in federal funds.

The Puerto Rico Planning Board is conducting an economic survey on Port of San Juan improvements, under the direction of William C. Crosby, of Crosby Corp., New York, covering cargo movements and the feasibility of the project. After this survey is completed, the planning board will be in a position to determine which part of the project will start first, allocation of funds to be requested, and number of years for the construction of facilities under consideration.

(*Continued on page 50*)

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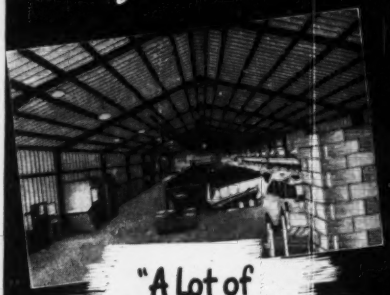

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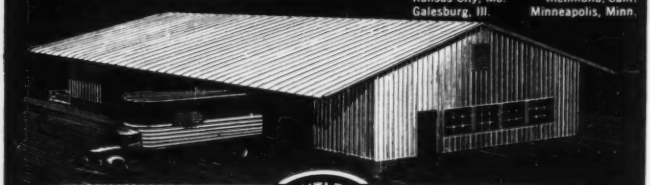

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(Continued from page 49)

Highways

Venezuela—The contract for the proposed $30-million, 4-lane express highway from mountainous Caracas to its nearby seaport of La Guiara is still to be let. Six contracting firms, five from the United States and one from Mexico, originally made bids for this job in June of this year. On July 10, all bids were declared void because none of them met the requirements of the Venezuelan government. All bids were considered too costly. The government is now negotiating with the W. M. Barnes Co., of Los Angeles, Calif., one of the original bidders, and hopes to arrive at an agreement with this firm soon.

Venezuela is negotiating to have the contractor finance the construction of the road over a period of five years, whereas the actual building time is estimated at thirty months. It is not planned to issue bonds for the project, or specifically allocate the tolls from the new road to retire the debt, but to have the credit of the government as the financial basis for the agreement. The government says that the large cash outlay over the two and a half year construction period will place it in a short cash position as far as other projected highway developments are concerned.

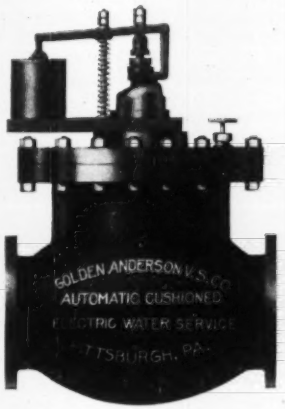
The four-lane concrete highway will be a far cry from the original road begun in 1837 and inaugurated in 1845. That early road, which replaced the donkey trails used by the early settlers, was itself outmoded by the narrow gauge railroad completed in 1883. However, in the early part of this century the development of automobiles and trucks required the present concrete highway, in use since 1928. Present traffic conditions require the use of both roads on a one-way basis.

The new road will be about 10 miles long as against 23 for the 1928 road, and will reduce the number of curves from nearly 400 to 32. The 16-mile speed limit is being raised to 50 miles, reducing the travel time from one hour to about fifteen minutes. This will be accomplished by building three tunnels with a total length of 8,364 ft., and excavating 105 million cubic ft. of material, of which about 20% is rock.

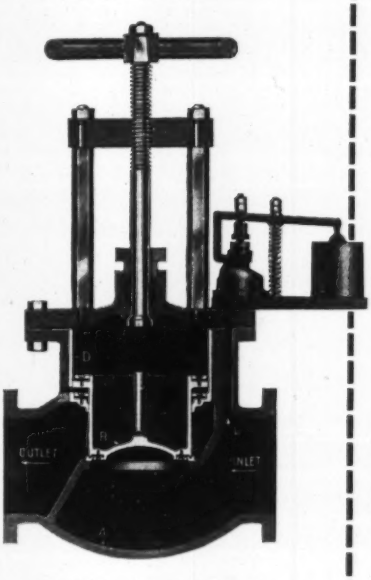
The completion of the "Autopista Caracas-La Guaira" is of tremendous significance to the residents and the businesses of the capital city, as every piece of imported merchandise must be trucked up the present grade, 12% in spots. This will also make Caracas a sea-side resort with only fifteen minutes from the office to the beach.

ON YOUR SERVICE LINES . . .

GA



G-A Electric Water Service Valve is furnished with renewable cups and seat washer to eliminate any metal to metal contacts. Operation is by solenoid on either AC or DC circuit for any voltage. Also furnished in Angle Pattern.



G-A Electric and Manual Water Service Valve may be operated either by solenoid on AC or DC circuit or by a manual handwheel. Also furnished in Angle Pattern.

Golden-Anderson

ELECTRIC AND MANUAL

WATER SERVICE

Valves

Ideally suited for any spray service or for remote electrical control, these Golden-Anderson Valves give you the dependable flow control you need on your service lines.

The Electric and Manual Water Service Valve may be operated either by electrical control or may be closed by the manual handwheel. The "combination" design of the yoke top permits the valve to be manually opened and held open by the stem, like an ordinary stop valve.

Because of perfect air and water cushioning, there is no water hammer or shock in the automatic operation. Both the electric and the manual-electric type valve are arranged to operate either when the solenoid is opened or closed. AC or DC current may be used. These highest quality valves are available in cast iron, semi-steel and cast steel with non-corrosive trim of bronze, Gavalloy or stainless steel. Write for additional technical information.

GOLDEN-ANDERSON *Valve*

SPECIALTY COMPANY

KEENAN BUILDING, PITTSBURGH 22, PA.

LIFE AND PROPERTY PROTECTION
VALVES SINCE 1905

MY!... BUT SUCCESS

(Portrait of a growing family)

If you study the picture above, you'll notice a certain family resemblance . . .

There's Awful Friendly, Plenty Friendly, Utterly Friendly and a flock of others whose names slip me now.

You see the American Mutual family has grown so rapidly in the last 4 years, even I'm amazed!

In this short period, we've practically doubled the amount of business we do! (And we were up among the leaders to begin with.)

I say this, not to brag . . . but to let you know that when you join the American Mutual family as a policyholder, you're signing up with one of the healthiest companies in America today!

Why did almost *twice* as many people come to us for protection recently? . . .

Because we offered them the chance to get *a dollar's worth of protection for 80 cents* in almost every case.

Because our special Specialized Engineering Construction Service, which we feel is the greatest extra in insurance, has

AMERICAN MUTUAL...the first American liability insurance company

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CERTAINLY BREEDS!

by Mr. Friendly

demonstrated year after year that we can help businessmen reduce costly accidents, and increase plant efficiency and profit at the same time!

Because we've helped cut premium costs for hundreds of companies to way below the average for their field! (As much as 50% below average in some cases.)

The point is . . . we'd like to have you join our big Friendly family. We'd like to help you in every way.

And personally, I get a kick out of being head of a family with thousands and thousands of new members every year.

Beats quintuplets any day!

MAIL THIS COUPON NOW—WITHOUT DELAY!

Dept. O-86, American Mutual Liability Insurance Company
142 Berkeley Street, Boston 16, Massachusetts

Without obligation, please *rush* to me more information on the All-American Plan so that I may be richer and happier!

Name _____

Street _____

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MUNICIPAL AFFAIRS

TRUCK TERMINAL DEDICATED—On Oct. 31 the $9 million New York Union Motor Truck Terminal was dedicated and is now in operation. Near the Holland Tunnel between West Houston and Spring streets, it was built and will be operated by The Port of New York Authority as a consolidating terminal at which less-than-truckload common carrier motor freight will be received and sorted for interchange between over-the-road truck units and local city trucks. It will reduce by 25 percent the movement of big trucks through congested Manhattan streets. It has a central freight platform 800x80 ft. and will accommodate 144 trucks, with a daily maximum capacity of 2,000 tons of freight. An overhead dispatch gallery runs the full length of the platform, and there is a transverse 10-ton crane for very heavy shipments. The terminal is equipped with the latest devices for speeding the flow of freight, expediting the handling of papers, and contributing to the comfort of workers and truckmen.

Parking Problems

Akron, Ohio—City council has authorized negotiations for the purchase of 35,000 sq. ft. at Bowery and Quaker Sts. to provide space for 3,600 cars, if plans for a 3-deck garage are approved.

Fresno, Calif.—If a planned underground parking garage is built, it may be necessary for the local bus line to seek a fare increase, as General Manager A. E. Ogilvie of the Fresno City Lines says that increased downtown parking facilities would cause a decrease in bus passengers.

Baltimore, Md.—Councilman DiDomenico says present traffic policies put the cart before the horse. They provide one-way streets to hasten the flow of automobiles into the central section but ban parking so that there is no place for the autos to stand. He wants off-street parking facilities to remedy this condition.

Minneapolis, Minn.—George A. Devlin of Detroit, Mich., vice-president of National Garages, Inc., has presented to the city council layouts and financial aspects of three proposed parking ramps for the "loop" district at these sites: Opposite Dyckman Hotel; at Seventh St. and Second Ave. S.; and at Ninth St. and La Salle Ave.

Urban Redevelopment

The speed with which slum clearance and urban redevelopment projects get under way under the Housing Act of 1949 will depend, among other things, on state statutes authorizing municipalities to undertake such projects, according to Administrator Raymond M. Foley of the Housing and Home Finance Agency.

Careful studies to determine the state legislation necessary for cities to participate in the program are now being made by the HHFA, Mr. Foley said, but municipalities having projects should also study their particular state law to determine the procedures they must institute in developing their slum clearance projects. He pointed out that contracts for federal loans and grants can be entered into only with duly authorized local public agencies with the necessary powers under state law to carry out the functions and fulfill obligations of the slum clearance and redevelopment program as provided in the act, which defines "local public agency" as "any state, county, municipality or other governmental entity or public body which is authorized to undertake the project for which assistance is sought."

Under different state laws, such an agency could be a special redevelopment agency, a local housing authority or a city itself. These agencies must have power to acquire, by condemnation or otherwise, slums and blighted areas, and to clear and sell the areas for redevelopment. They must also be able to bind private redevelopers to agree to undertake new construction in accordance with a local plan for the most appropriate use of the land. Other powers relate to the financial obligations which are necessary in meeting the local share of financing the projects.

A garbage disposal unit for every home

Officials at Jasper, Ind., population 5,000, hope that their community will be the first in the country to have an automatic garbage disposal unit in every home. Under a plan proposed by Mayor Herbert Thyen, the city would act as a purchasing agent for its residents, buying the units wholesale and giving citizens the benefit of the lower cost. If homeowners are not able to pay cash, the city will let them buy on the instalment plan.

The reason for the special effort at this time is that the farmers who had contracted to collect the town's garbage at $5,000 a year do not want the job any longer.

Study St. Louis housing

St. Louis officials who rejected such a move last June have agreed to a $45,480 housing survey. It will bolster a new minimum housing standards ordinance, effective in April.

Anti-pollution Work—The Kentucky State Board of Health has served notice on the Louisville & Jefferson County Metropolitan Sewer District, the Campbell-Kenton County Sanitation District No. 1, and the cities of Ashland, Cattlettsburg, Maysville, South Port Mitchell, Carrollton, West Point, Owensboro, Henderson and Paducah to take steps within a year to correct their pollution of the Ohio River by ceasing to dump raw sewage into the stream.

(*Continued on page 56*)

CHEVROLET ADVANCE-DESIGN TRUCKS

Deliver the Goods . . . at Lower Cost

CHEVROLET You get performance you can count on with Chevrolet Advance-Design trucks—plus famous Chevrolet 3-WAY THRIFT—lower operating costs, lower upkeep costs, and the lowest list prices in the entire field. These high powered trucks are true economy-masters—built to deliver all that's asked of them in stability, stamina, handling ease, comfort, and convenience. Truck owners know that when they own a Chevrolet, they have the No. 1 truck buy in America . . . outselling the next two makes combined. Why delay your choice—see your Chevrolet dealer for full details soon.

CHEVROLET MOTOR DIVISION, *General Motors Corporation*, DETROIT 2, MICHIGAN

TOP-VOLUME PRODUCTION BRINGS YOU TOP-VALUE FEATURES!

Chevrolet's new 4-SPEED SYNCHRO-MESH TRANSMISSION offers quicker, quieter and easier operation. Double clutching is eliminated. Faster shifting maintains speed and momentum on grades. In Series 3800 and heavier duty models.

Chevrolet's power-packed VALVE-IN-HEAD ENGINES provide improved durability and efficiency as well as their world-famous economy.

Chevrolet trucks have the famous CAB THAT "BREATHES"*! Outside air is drawn in and used air forced out! Heated in cold weather.

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**Heating and ventilating system and rear-corner windows with de luxe equipment optional at extra cost.*

CHOOSE CHEVROLET TRUCKS FOR TRANSPORTATION UNLIMITED!

MUNICIPAL AFFAIRS

(continued from page 54)

Buffalo Projects

In a report on the first year's activities of the committee on capital expenditures of the common council of Buffalo, N. Y., Peter J. Crotty, president of the council made these five recommendations:

Creation of a port authority to bring about complete rehabilitation of harbor facilities; a plan for consolidating police stations and fire houses; a review of charter provisions relating to street repaving; a demand for more expeditious action by the state on proposed arterial highway developments; and that provision be made in the tentative capital budget for the next few years for a matching of funds with the federal government in connection with urban development.

Building Code News

Columbus, Ohio—Commissioners of Franklin County are planning to adopt a building code patterned after that of the city of Columbus. The new code will be drawn up after a recent amendment to the state law governing county buildings becomes effective. The new amendment extends the power of commissioners to include regulation of all types of construction in the county proper, instead of just residential buildings.

Akron, Ohio—City council approved a new building code and it went into effect Nov. 11. It replaces building regulations in force since 1921, and is expected to lower the price of low-cost houses and commercial buildings.

Municipal Notes

The first traffic engineer of Dayton, Ohio, will be Albert L. Forde, an assistant traffic engineer with the Washington state highway department. He will head a new traffic engineering division to be established in the services and building department.

At Cleveland, Ohio, a special subcommittee of the local auto club's safety advisory board has been investigating the scientific selection of pavement for the best reflective quality. Kirk Reid, Nela Park authority on illumination, has offered to set up light measuring equipment at a number of places where experimental types of paving have been used, thus providing the city with a means of determining which type of paving has the best reflecting quality. A series of laboratory tests may also be made, if necessary.

The utility board of Tulsa, Okla., has adopted a program of improvements for the city's water system, including a schedule for projects costing $3,616,730. The work would be on the Mohawk pump station and the distribution system. The report was prepared by water officials at the request of the Tulsa County master plan committee.

Spare fill from the city and University of Minnesota building projects is being used by Minneapolis at the west end of the Franklin Ave. bridge where there is to be a highway separation. The city gets the fill free from the building projects and thereby saves taxpayers an estimated $16,000.

As soon as all details for a 500,000-gal. storage reservoir can be worked out at Grandfield, Okla., there will be a special election for a bond issue to finance the project.

Toledo, Ohio, is considering the construction of water softening facilities for its waterworks system. An estimated annual saving of $750,000 to users is expected.

The examining committee of the board of estimates of Milwaukee, Wis. has approved a $7,754,600 permanent improvement program for 1950 to include, among other things, $3,700,000 for sewers, $500,000 for an incinerator and $655,000 for lighting and other street improvements.

Almost one-tenth of the houses built in Canada last year were in Montreal, and this proportion remains the same this year. In Canada 81,000 units were built and 8,800 units in Montreal and its suburbs. It is expected there will be 10,000 new units in the Montreal area this year and 100,000 in all Canada.

Of a $3,000,000 bond issue voted for sewer construction in 1944, Tacoma, Wash., still has approximately $2,000,000 to spend, according to City Engineer D. E. Morris. The first $1,000,000 went for trunk sewers in the south end of the city while the rest will go for a disposal plant, the necessary connecting trunks, and for several submerged outfalls in the north end not tributary to the plant.

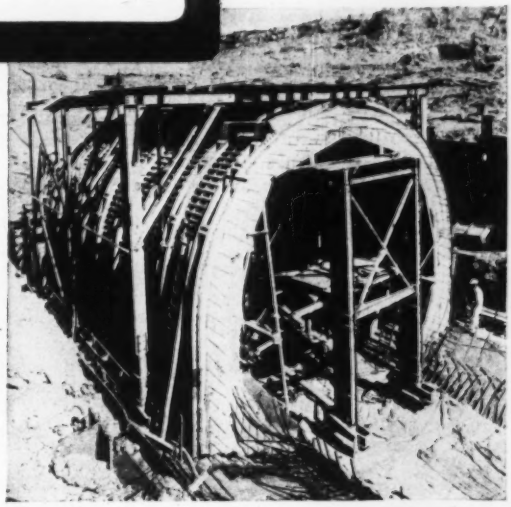
More Garbage Collectors—The budget and finance committees of the city council of Jacksonville, Fla., has received an engineering report from Reynolds, Smith and Hills which recommends that the city get more garbage collectors and provide them with better tools. It also says the city needs greatly increased incinerator capacity.

Tunnels Progress—With major contracts let, Houston construction men are watching rapid progress on two major tunnel projects now under way—the Baytown and Pasadena tunnels under the Houston Ship Channel. Brown and Root, hold a $4,860,000 contract for the subaqueous portion of the Baytown Tunnel, is financed by county state and federal governments: the Pasadena Tunnel, on which Merritt, Chapman and Scott hold the main contract at $6,138,000, is financed entirely by Harris County.

MUNICIPAL SPORTS ARENA—This is the new municipal sports arena under construction in Milwaukee, Wis. It is scheduled to be ready for use next April. The arena, which was financed by a $2,750,000 bond issue, covers a city block and is connected with the Municipal Auditorium. It will have a maximum seating capacity of 13,500, with 9,000 permanent and 4,500 portable seats. The arena floor will be 235 by 105 ft.—Wide World Photo

Job tough! Problems unusual!

28'0 Diameter COLLAPSIBLE TUNNEL FORMS being used on PASADENA TUNNEL



Forms and form technique by

CONCRETE FORMS CORP.

In the construction of the Pasadena Vehicular Tunnel in Pasadena, Texas, treacherous ground at the bottom of an 110-foot deep excavation caused difficulties solved by pouring the complete shell for the land tunnel in the first pour. Forms and form techniques were supplied by Concrete Forms Corporation.

Steel shells of the underwater tubes and special 40-foot traveler forms were specially designed for the purpose by Concrete Forms Corp.

In the underwater sections provision for quick assembly and knock-down was needed since the parts had to be shifted from one of the 375' tubes to the next one through a six by four-foot opening. Concrete Forms solved the problem.

To those interested in the details of this tunnel, we will gladly send a reprint of an article on the subject. Just ask for it. Whether you plan to go through mountains, tunnel underwater or just pour a foundation for a small warehouse, if there is any special problem, consult Concrete Forms Corp.

We have solved so many problems for contractors and builders that we can help you use a sharper pencil on your estimates. Please write without hesitation for any advice or information. Today's a good time!

STATISTICS OF PASADENA TUNNEL

1500 feet underwater, 2236 feet under land—Excavation 110 feet deep—Inside diameter of tunnel 28'—Underwater tunnel sections 375' long—Waterstop shell, 32' diameter—Shells for underwater section floated 400 miles to site.

PASADENA VEHICULAR TUNNEL, Pasadena, Texas
For Harris County, Texas

ARCHITECTS & ENGINEERS
Palmer & Baker
GENERAL CONTRACTOR
Merritt, Chapman & Scott

LAND SECTIONS BY
R. P. Farnsworth & Co., Inc.
STEEL FORMS FOR LAND & WATER SECTION
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Irvington, New York

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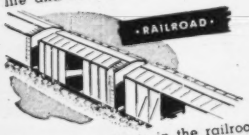
IRVINGTON, NEW YORK

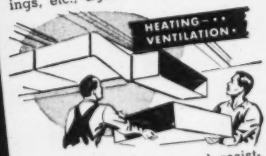
ZINC
SERVES YOU

Galvanizing (Zinc coating) insures long-time, low-cost service. For as long as iron or steel is coated with Zinc, it cannot rust. For satisfaction, use galvanized materials. They're "Sealed-in-Zinc" against rust.

TIME proves galvanized sheets stay stronger longer. Used as roofing and siding, they give buildings the "strength of steel" . . . the rust protection of Zinc. The "Seal of Quality" (above) is your guide to economy in buying galvanized sheets. It means they carry at least 2 oz. of Zinc per sq. ft. Galvanizing also lengthens fence life and service.



Galvanized products in the railroad industry guard bridges, cars, buildings, etc., against rust.



Strength, workability and resistance to heat as well as rust make galvanized sheets ideal for heating and air-conditioning.

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Fully illustrated and packed with practical information on galvanized sheets and Metallic Zinc Paint. Send for them, *today!*

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Send me without cost or obligation the illustrated booklets I have checked

- ☐ Repair Manual on Galvanized Roofing and Siding
- ☐ Facts about Galvanized Sheets.
- ☐ Use of Metallic Zinc Paint to Protect Metal Surfaces

Name _____
Address _____
Town _____ State _____

MEN AND JOBS

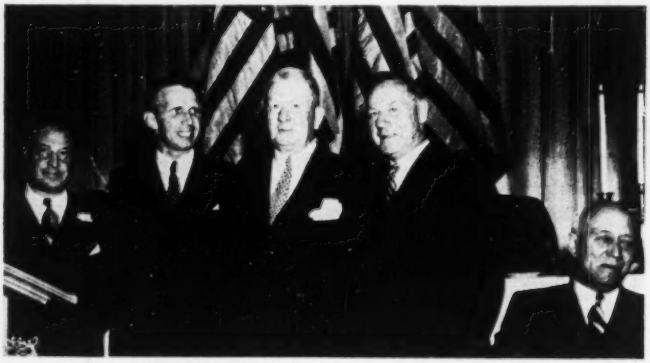
Roderick L. Porter, Portland, Ore., has been appointed assistant right-of-way engineer in the Oregon State Highway Commission. He had previously been senior resident engineer with the highway department, at Portland. Another appointment announced by the department is that J. Douglas Walker has been advanced from assistant right-of-way engineer to assistant division engineer at Salem.

Spencer V. Cortelyou, assistant California State Highway Engineer, under whose supervision the Los Angeles Freeway System was being constructed, has retired after 37 years with the California Division of Highways. He joined the Los Angeles district Feb. 1, 1912, and remained until his retirement. He supervised engineering on the Ridge Route, the Coast Highway from San Diego to Santa Barbara, and other main highway projects in Ventura, Orange, and Los Angeles counties. **Paul O. Harding,** former district highway engineer at Stockton, succeeds Cortelyou in the Los Angeles position.

Kenneth Bartel, an employee of the Oregon State Highway Department since 1929, has been made junior resident engineer in Rainier, to be in charge of construction projects in that area.

W. L. Anderson, assistant chief en-

During an intensive two-day course on the military aspects of atomic energy at Sandia Base, atomic weapons research center at Albuquerque, N. M., Maj. Gen. L. A. Pick, chief of engineers, was one of 12 top generals attending. Here he sits, front, between Maj. Gen. H. F. T. Hoffman, chief of staff, 4th Army, left, and Maj. Gen. W. G. Wyman, chief of staff, 1st Army.



At the dinner which concluded the recent Greater Philadelphia-South Jersey conference on planning and economic development are shown, from the left, Arthur C. Kaufmann, chairman of the board of the Philadelphia Chamber of Commerce; Gov. A. E. Driscoll of New Jersey; Gov. J. H. Duff of Pennsylvania; Ralph Kelly, president of the Philadelphia Chamber of Commerce; and Martin W. Clement, chairman of the board of the Pennsylvania Railroad.

gineer for the Utah State Road Commission, will act as the commission's representative in drafting plans for the proposed $20,000,000 west side express highway in Salt Lake City. He will collaborate with **C. G. Wooley,** who is city zoning and planning engineer.

T. H. Dennis ended a 37-year career with the California State Division of Highways when he retired as maintenance engineer on Sept. 30. Under his leadership the state has spent more than $300,000,000 on highway maintenance in the last 23 years in addition to about $3,000,000 a year from construction funds handled through his department. Mr. Dennis promoted the use of radio in highway departments, and as chairman of the American Association of State Highway Officials' committee on radio use, he was instrumental in getting the FCC to reserve a group of frequencies solely for the use of highway departments.

Col. D. A. Morris, Army engineer for the Duluth, Minn., district, will succeed **Col. J. O. Colonna** as commanding officer of the Milwaukee district. He will also continue his Duluth assignment. Colonna is now in Washington as a member of the permanent joint board for defense of United

John E. Kinney of Morris Knowles, Inc., Pittsburgh, Pa., has been appointed sanitary engineer on the staff of the Ohio River Valley Water Sanitation Commission. He has been engaged in the design and installation of industrial waste-treatment plants. From 1942 to 1946 he served as a sanitary engineer officer in the Navy Seabees in the construction of facilities in the South Pacific, and was later assistant maintenance superintendent at the Philadelphia Naval Base. He holds a degree in sanitary engineering from Manhattan College, and a master's degree from Cornell University where he specialized in chemistry and sanitary engineering.

Which would you rather lose—property dollars or income dollars?

If disaster shuts down your operations, you will suffer an income and a property loss. You need protection against *both!*

Property insurance alone won't protect you against loss of income, but Hartford's Business Interruption Insurance can do just that. If fire, storm, or other hazards insured against, force you to suspend operations, Business Interruption Insurance can protect you against loss of anticipated earnings.

Business Interruption Insurance can give you *just what your business itself* would have given you if no interruption had occurred.

Here, briefly, is how Business Interruption Insurance protects you:

OPERATING STATEMENT FOR ONE MONTH

Before Fire

Sales	$30,000
Cost of Merchandise	18,000
Gross Profits	$12,000
Expenses	10,000
Net Profit	$ 2,000

After Fire *—WITHOUT Business Interruption Insurance*

Sales	None
Cost of Merchandise	None
Gross Profit	None
Expenses continuing during shutdown	$ 7,000
Net Loss	$ 7,000
Add. Anticipated Profit Prevented	2,000
Total Loss	$ 9,000

After Fire *—WITH Business Interruption Insurance*

Sales	None
Cost of Merchandise	None
Gross Profit	None
Income from Business Interruption Insurance	$ 9,000
Expenses which continue	7,000
Net Profit	$ 2,000

(Same as was anticipated had no interruption occurred)

Hartford's Business Interruption Insurance is adaptable to almost any business enterprise; stores, factories, garages, theatres, hotels, etc.

The Hartfords have prepared work sheets to help determine how great a loss you might suffer and how much insurance you will need to safeguard your income. Write for them—there's no obligation!

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HARTFORD FIRE INSURANCE COMPANY
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Year in and year out you'll do well with the Hartford

Your **Sandblast Problems Answered**

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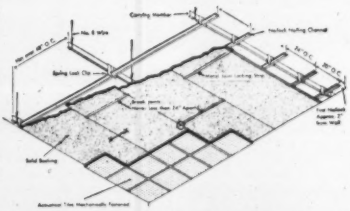
Although used primarily for suspended ceiling construction, these nailing channels provide an ideal method for installing panels, slabs, sheets and other kinds of covering, flat or corrugated, in fact any nailable material, over steel or concrete. This method is as simple and safe as it is economical. Applications may be as varied as the engineer's or architect's ingenuity in using Nailock Universal Nailing Channels.

Nailock Reduces Time-Wasting Grief and Time Costs On Suspended Ceiling Jobs—Provides A Rigid, Safe and Permanent Installation.



USE *Nailock* FOR SUSPENDED CEILING CONSTRUCTION

**Trade Mark Reg. U.S. Pat. Off.*

NAILOCK STEEL DIVISION
THE *Sanymetal* PRODUCTS CO., INC.
1704 Urbana Road • Cleveland 12, Ohio

States and Canada and a member of the joint United States-Mexico defense committee.

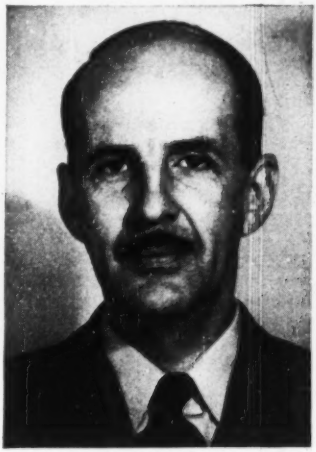
Alexander Scott, division engineer, Canadian National Railroad, since 1927, has retired. He directed the conversion of the Prince Edward Island Railway from narrow to standard gauge, and other major projects in that province.

Ralph C. Pate, of Atlanta, Ga., has been appointed chief engineer for the Southern Bell Telephone Co. to head the company's entire engineering operation in North Carolina.

Bernard L. Weiner, consulting engineer, has opened an office at 29-47 41st Ave., Long Island City 1, N. Y., specializing in grade separations, skew bridges and slabs.

Victor E. Hall, formerly operator of the Hall Engineering Co. in Binghamton, N. Y., has entered private practice as a consulting engineer in Syracuse, N. Y.

Howard P. Gerlach has been appointed vice-president of John W. Harris Associates, Inc., builders, to be in charge of their Chicago district office.



C. Douglas Sauer has been appointed assistant hydraulic engineer for the British Columbia Electric Co., Vancouver. Formerly with the American Gas & Electric Service Corp., New York, he has served with Ebasco Services, Inc., of New York; the U. S. Engineer's office at Passamaquoddy, Me., and the Beauharnois Power development in Quebec. B. C. Electric recently established a hydraulic department to make preliminary and detailed studies of company hydroelectric power projects.

Erwin E. Webber, superintendent of streets, Concord, N. H., and connected with that city's engineering and construction work for over 25 years, has tendered his resignation to the board of public works.

David S. Culver, former office engineer for the Bureau of Reclamation's Hungry Horse project, Montana, has been promoted to assistant construction engineer.

Leo L. Lawton, Iowa highway resident engineer at Mason City, has resigned to go with E. M. Dusenberg, Inc., highway contractors at Clear Lake, Iowa.

O. C. Phillips, formerly in business at Beebe, Ark., has been appointed assistant inspector in the engineering division of the Arkansas highway department.

M. C. Methvin, former engineer for District 3, of the Arkansas highway department, will be placed in charge of state force work, and **J. C. Perkins,** who had been in charge of District 9, will become assistant bridge engineer. **Homer Hill** will replace Methvin at Hope, Ark., and **Jewell Whitaker** will succeed Perkins at Harrison.

F. C. Wood, former city engineer of Westmount, Que., has been appointed works manager for Dalhousie, N. B.

Allen F. Jones, of Harrisburg, former chief engineer for the state department of Property and Supplies, has been named directing engineer of the new Pennsylvania General State Authority. **Lloyd C. Ritchie,** of Harrisburg, former property and supplies employee, is its structural engineer.

J. Swain, Asotin County engineer at Asotin, Wash., for more than 40 years, will retire on or before Jan. 1 to enter private practice.

Arthur E. Dodds, structural engineer and architect, has been appointed assistant city building superintendent at Seattle, Wash. He received a degree in structural engineering from the University of Washington in 1935 and has since served with the Bureau of Reclamation, the state highway department, Bonneville Power Administration, and the Weyerhaeuser Timber Co., and also has engaged in private practice at various times.

Hitchcock & Estabrook, Inc., consulting engineers, Minneapolis, Minn., have been retained by Milbank, S. D., for a sewer and water survey.

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ANSWER: { **The KENNEDY SAFETOP Hydrant**

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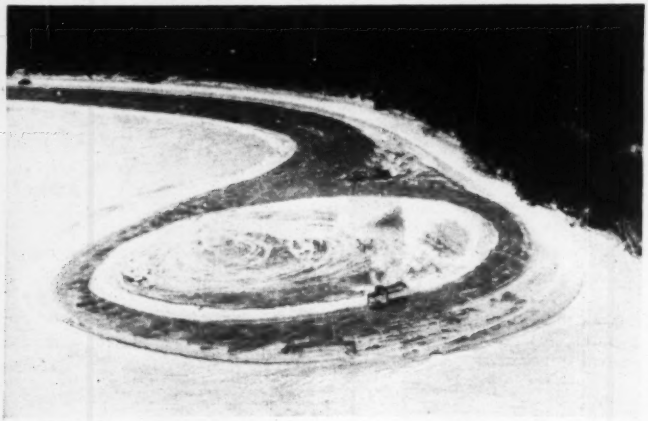

TRUCK-TESTING COURSE at Pine Lake, near Clintonville, Wis., where motor truck researchers from the University of Wisconsin conducted their experiments. Research tests are run throughout the winter whenever weather permits.

Winter Truck Tests

Motor trucks operate best on ice when the temperature is between 24 and 30 deg. F., a research project of the University of Wisconsin has determined.

Conducted last winter by the university in cooperation with the Four-Wheel Drive Co. at Pine Lake, near Clintonville, Wis., the tests were set up to find the resistance to spinning of a motor vehicle on ice, under various conditions.

Headed by Archie H. Easton, director of truck research projects at the university's College of Engineering Experiment Station, the studies developed that a vehicle is able to pull 15.6 percent of its total weight on ice when the temperature is 8 deg. When the thermometer climbs to 24 deg., the static pull is 17.1 percent, and at 29 deg. the reading measures 22.8 percent. The spinning pull at all temperatures below the freezing mark was found to be low, ranging from 1.5 to 2.8 percent of the total weight of the vehicle.

When the temperature rises to the freezing mark or above, the static and spinning values approach each other, the experimenters reported. This is because the spinning pull increases as the ice gets softer and tires are able to dig into it more readily. Temperatures below 22 deg. cause a light ice film to form on tires so that the wheels spin more readily, it was found.

Checking on resistance to sliding or skiding, the university scientists found that the coefficient of fixed friction when the brakes were applied drops sharply as sliding begins, then rises again as the vehicle speed gets lower. Measured as a coefficient of friction, the resistance to sliding at the beginning and the end of the slide is about twice as high as that noted during the slide, test results showed. Using figures, when the brakes were first applied and at the end of the braking, the coefficient was 0.19. During the slide, that figure fell to 0.09.

Research Roundtable

Research can be a very beneficial part of engineering school work. This point was emphasized by Ralph E. Montonna, director of the Industrial Research Institute of Syracuse University, discussing university research policies with seven other engineering research administrators as members of a roundtable before the Engineering College Research Council of the American Society for Engineering Education in Kansas City, Mo., on Oct. 28.

Since colleges have no desire to let research overshadow educational goals, Charles W. Williams, coordinator of research, Case Institute of Technology, pointed out that college administrators must "examine research in a different light than if it were a goal to be pursued in itself." The effect of research on other university activities should be considered, the speaker stressed.

All participants agreed in emphasizing integration of research with educational effort; the character of research should be such that all projects fit in "with the research interests and desires of the faculty," Dr. Montonna said. All administrators reported efforts to encourage their faculty members to participate in research. Where an engineering experiment station is only beginning to function, as at the University of Arkansas, this presents special difficulties, Dean George F. Branigan reported. J. O. Maloney, executive director of the University of Kansas Research Foundation, said that some faculty members may hesitate to accept projects under industrial sponsorship because these are regarded as "risk" operations in which failure to produce results within a time limit may endanger professional reputation.

"It has been our policy," Clark A. Dunn of Oklahoma A & M College reported, "to encourage research workers to begin with simple problems, out of which almost always come questions of a more important and fundamental nature."

Extra compensation for faculty members participating in sponsored research was reported by some roundtable participants, notably Dean R. C. Ernst, director of the University of Louisville Institute of Industrial Research. Other speakers reported that research was encouraged only to the extent of reduced teaching loads wherever possible. Such a policy is designed to keep faculty emphasis on educational goals.

J. Hugh Hamilton, director of the Utah Engineering Experiment Station, University of Utah, stressed the importance of assured continuity in academic research activities. Thus there is hesitation to accept short-term industrial and government contracts, especially in small schools where one contract may provide a significant portion of the research income.

Proper administration of patents was also cited as important in stimulating research activity. The main function of university-held patents, said Quincy Ayres, assistant to the president, Iowa State College, is not to make money but to stimulate interest in and protect university research results. No "infallible rule for predicting in advance the income-producing proclivity of any patent" seems to be known, he said.

Complete texts of the several short papers presented at the roundtable will be published before the end of the year. Requests for copies should be addressed to John I. Mattill, Secy., Engineering College Research Council, Room 7-204, M.I.T., Cambridge 39, Mass.

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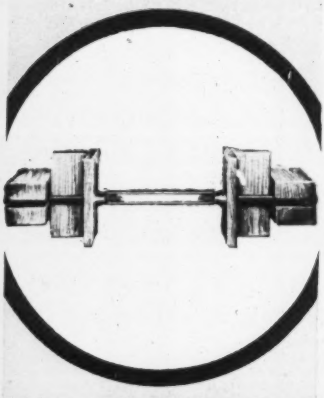

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UNIT PRICES BID BY CONTRACTORS

Sanitary sewer for Mexico, Mo. sees close bidding

The four lowest bidders on 7 miles of 8-to-21-in. sanitary sewers for Mexico, Mo. were within 6 percent of each other, but the low was 28 percent under the high of 9 bids.

Horner and Shifren, St. Louis, Mo., are engineers for this project on which work is to start immediately. It must be completed within 15 months.

The work consists of relief sewers to be built through built up areas of the city. The contractor furnished all materials complete in place, but had an option as to kind of pipe as noted in the list of bidders.

Prevailing wage rates are $2 for skilled labor, $1.50 for semi-skilled, $1.10 for common labor.

Bids were opened Sept. 20, 1949, from:

1	E. J. Fisher, St. Louis, Concr. or VC pipe, cmt mortar on concr., pre-mix bit. on clay—(opt. of city) (Contr)	$186,740
2	Samuel Kraus Co., St. Louis, VC pipe, pre-mix bit. jt.	189,704
3	R. & S. Constr. Co., St. Louis (no pipe pref.)	197,016
4	W. A. Blue Co., Clayton, Mo. (concr. pipe, cmt mortar)	199,918
5	Fred M. Luth, St. Louis, VC pipe to 12", concr. over	221,388
6	Davis Const. Co., Boonville, Mo., VC pipe, cmt mtr.	222,656
7	Clark Contracting Co., Eldon, Mo., VC pipe, cmt mtr.	228,451
8	J. E. Latta Const. Co., St. Louis, concr. pipe, cmt mtr.	249,421
9	Skrainka Const. Co., St. Louis, VC pipe	260,656

Items	Quantity	Unit Prices 1	2	3	4
Excav. Cl. A	1,250 cy	$10.00	$6.70	$15.00	$15.00
Cl. B	25,945 cy	3.00	2.25	2.70	2.49
Brick mas. in manholes	11,080 cf	1.50	1.90	2.10	2.05
C. I. mh. fr. & cov., std. set	125	36.00	39.35	50.00	40.00
C. I. mh. step	615 ea	1.00	1.13	1.50	1.00
Sewer, 6"	15 lf	0.60	0.85	0.59	0.90
8"	8,730 lf	0.80	1.33	0.74	0.90
10"	4,290 lf	0.90	1.45	0.95	1.10
12"	6,005 lf	1.10	1.63	1.20	1.75
15"	4,005 lf	1.60	2.51	1.84	2.15
18"	6,135 lf	2.10	3.56	2.43	2.65
21"	6,170 lf	2.70	3.72	3.11	3.45
C. I. pipe, 12"	12 lf	10.00	6.80	5.00	10.00
16"	12 lf	20.00	9.00	6.00	15.00
20"	60 lf	30.00	11.30	10.00	20.00
Y Juncr., 6" on 8" pipe	67 jct	3.00	1.50	3.80	3.00
on 10" pipe	30 jct	3.00	2.13	5.32	4.00
on 12" pipe	41 jct	5.00	3.25	6.84	5.00
on 15" pipe	19 jct	8.00	4.28	10.26	7.50
on 18" pipe	10 jct	10.00	5.53	14.36	10.00
on 21" pipe	5 jct	15.00	7.00	19.14	15.00
Juncr., 8" on 18" pipe	1 jct	10.00	5.53	14.36	10.00
Tee, 6" on 6" pipe	1 ea	3.00	1.50	2.12	3.00
Tee, 8" on 8" pipe	5 ea	3.00	1.70	3.80	3.00
Tee, 12" on 12" pipe	1 ea	5.00	3.25	6.84	5.00
on 15" pipe	1 ea	8.00	4.28	10.26	7.50
Pipe elbow, 6"	2 ea	2.00	1.35	2.12	3.00
8"	4 ea	2.00	1.80	3.04	3.50
12"	2 ea	5.00	3.30	5.46	5.00
Cut curve, 21"	1 ea	20.00	19.00	35.00	25.00
Stub, 8"	19 ea	2.00	2.40	3.00	3.50
Reinf. concr	35 cy	60.00	50.00	100.00	70.00
Cl. B concr	339 cy	20.00	20.15	15.00	20.00
Lumber, left i p	60 Mfbm	70.00	20.00	85.00	75.00
Remov. and repl. 24" pipe culv. excl. of excav	40 lf	8.00	4.60	5.00	5.00
Remov. and re-bld new br. gutter inlet	1 ea	150.00	175.00	200.00	150.00
Break into exist. mh. & make connect	15 ea	30.00	32.00	25.00	15.00
Break into exist. reinf. concr. intk. mh. at sew. treat. pl. & instal. new pipes, compl	ls	600.00	304.00	100.00	250.00
Re-lay strm. sew., excl. of excav. 8"	65 lf	8.00	0.86	2.00	1.00
12"	150 lf	6.00	1.32	3.00	1.75
Rest. concr. sdwk. pave	225 sf	0.50	0.74	0.50	0.50
Rest. br. sdwk. pave	20 sf	1.00	0.47	1.00	0.50
Rest. concr. st. pave	65 sy	7.00	6.00	4.00	5.00
Rest. br. st. pave	130 sy	8.00	3.65	5.00	6.00
Rest pen macad. pave	145 sy	4.00	1.30	3.00	3.00

OBITUARY

Luther Bateman, 93, formerly civil engineer for the Massachusetts Harbor and Land Commission, and an early graduate of Worcester Polytechnic Institute, died at Lancaster, Mass., recently.

Samuel J. Bull, 75, Plainville, Conn., superintendent of the Torrington Building Co. for 50 years, died Oct. 19.

Lt. Robert R. Lemon, 27, Marine Corps Reserve, and a Los Angeles civil engineering assistant with the street and parkway division, was lost off Santa Catalina Island when the F4U plane he was piloting crashed into the ocean. Lemon joined the Los Angeles City engineering department last July. He was a veteran of World War II and a graduate of the University of Southern California.

Clifford D. Woodward, 71, chief engineer for the Anaconda Copper Mining Co., since 1927, died at Butte, Mont., recently.

Odin Dorr, engineer and former Philadelphian, died Oct. 17 in Sao Paulo, Brazil. A graduate of the University of Pennsylvania, he was formerly assistant manager of the Rio de Janeiro office of the Baldwin Locomotive Works when the office closed in 1929. He remained in Brazil and was connected with several engineering firms. During the Second World War he was in charge of construction of strategic railroads for the Brazilian government.

Frank L. Cohen, 81, retired road builder and building contractor, died Oct. 29 in Buffalo, N. Y. His organization supervised construction of roads in Delaware, Pennsylvania and Ohio. He was president of the Frank L. Cohen Co.

George McKinley Boileau, 57, since 1944 chief of the Pittsburgh, Pa., Bureau of Building Inspection, died Oct. 20. He was graduated from Carnegie Institute of Technology. He had devoted much of his time and experience to revising Pittsburgh's building code.

Homer M. Parker, 57, Baltimore, Md., field engineer for the Portland Cement Association, died Oct. 23. Following his graduation from Muhlenberg College, Allentown, Pa., Mr. Parker did postgraduate work at Lehigh University. After brief employ-

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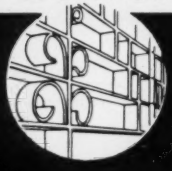

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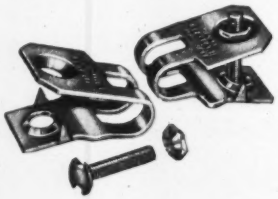

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ments with the Traylor Engineering Co., Allentown, and the Bethlehem Steel Co., Bethlehem, he joined the Portland Cement Association, New York office, in June, 1919. In January, 1922, he was transferred to the association's Philadelphia office, working in different Pennsylvania areas until he was assigned to Maryland 15 years ago.

John L. Von Glahn, 60, purchasing agent for North Carolina State College, Raleigh, N. C., died Oct. 29. He obtained his civil engineering degree from the college in 1918 and remained for several years as an instructor. In 1922 he entered the construction business, returning to the college in 1935 as director and business manager of athletics. He became purchasing agent in 1946.

Harold V. Smith, 59, civil engineer of Saratoga Springs, N. Y., was one of the victims of the DC-4 disaster in Washington, D. C., on Nov. 2.

John Howatt, 68, chief engineer of the Board of Education of Chicago, Ill., who supervised construction and maintenance of the city's school buildings for the last 35 years, died Oct. 24. He was an engineering graduate of the University of Minnesota.

Frank B. Jaynes, 77, Bridgeport, Conn., a member of Frank B. Jaynes & Associates, civil engineers and surveyors, died Oct. 11. Mr. Jaynes was a veteran of World War One and served as an ensign in the Civil Engineering Corps at the Boston Navy Yard.

William Goding, 87, retired chief superintendent of construction of the U. S. Military Academy at West Point, died Oct. 20 in Hartsdale, N. Y. A graduate of the Massachusetts Institute of Technology, he designed and directed construction of Army buildings at Fort Riley, Kan. He was retired in 1932 as chief superintendent of construction at West Point.

Homer M. Parker, 57, field engineer in Baltimore, Md., for the Portland Cement Association, died there on Oct. 23.

George Francis McGonagle, 73, retired Utah engineer, died in Salt Lake City Oct. 30. He had served as Utah state engineer and as Salt Lake City's municipal engineer. He had also been a member of the Utah State Utilities Commission, a resident engineer for the Oregon Short Line Railroad and was also a partner in the firm of C. J. Eldrich Construction Engineering Company.

Elections and Activities

Governor Adlai E. Stevenson of Illinois has appointed the five Illinois commissioners of the agency to carry out the program of the bi-state development district, including the counties of Madison, Monroe, and St. Clair in Illinois and the St. Louis metropolitan area in Missouri. The commissioners to serve with an equal number from Missouri, are: C. M. Roos, chairman, manager of the East St. Louis and Inter-urban Water Co., and chairman of the St. Clair County area planning group; Albert L. Wegener, former president of the East St. Louis labor council; H. E. Jackson, Waterloo; Roy S. Rauschkoll, secretary of the Tri-Cities Chamber of Commerce serving Granite City, Madison, Venice, and surrounding communities in Madison County; B. E. Bassett, East Alton. Governor Stevenson recently appointed three commissioners to meet with a similar group from Missouri to enter into a compact for the establishment of the bi-state development district. When this is signed, the commissioners for the bi-state agency will prepare a program to be submitted to the legislature of the two states in 1951.

A nine-member advisory committee to the governor on the comprehensive development of flood control and hydroelectric projects has been named by Gov. Kerr Scott of North Carolina. The governor named Dean I. O. Schaub, director of the Agricultural extension service at N. C. State College, as chairman. Other members of the committee include Col. George W. Gillette, Wilmington, director of the State Ports Authority; James A. Doggett, Greensboro, member of the Guilford County board of commissioners; George C. Franklin, Raleigh, North Carolina League of Municipalities; W. J. Demtoft, Asheville, representative of industrial interests on the State Board of Conservation and Development; W. B. Alston, Jefferson, State Board of Agriculture; Earl Garrett, Raleigh, director of the Soil Conservation Service, U. S. Department of Agriculture; Gwyn Price, Raleigh, chairman of the State Rural Electrification Authority; Harry B. Caldwell, Greensboro, master of the State Grange, who will represent the public at large.

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- **Less breakage of pipe during stripping**
- **Increased material yield**

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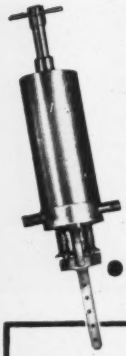

ready-mix, pre-mix, etc.

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- **Reduced segregation**
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*Address*_____

New officers of the American Society of Planning Officials are: Rafael Pico, chairman of the Puerto Rico Planning Board, president; Ernest J. Bohn, chairman of the Cleveland Planning Board, vice president. Named to the board of directors were A. E. K. Bunnell, consultant for the Toronto, Ont., Department of Planning and Development; Lasislas Sego, Cincinnati, planning consultant; and Charles B. Bennett, director of planning for Los Angeles, retiring president.

J. Ray Shute, mayor of Monroe, N. C., has been elected president of the North Carolina League of Municipalities. Benjamin Cone, mayor of Greensboro, first vice-president; Roy L. Williamson, city manager of Rocky Mount, second vice-president; and Dan K. Edwards, mayor of Durham, third vice-president.

Five state senators, Russell A. Waters Beverly; Milton Mueller Highland; Dennis J. Collins DeKalb; and Timothy C. Donnelly Carlinville, have been appointed members of the Mississippi River Scenic Parkway Commission.

MAJOR MEETINGS

Carolinas Branch A. G. C., Augusta, Ga., Nov. 27-29.

Society for Experimental Stress Analysis, Hotel New Yorker, New York City, Nov. 30-Dec. 1.

American Municipal Association, Hotel Cleveland, Cleveland, Ohio, Nov. 30-Dec. 2.

National Society of Professional Engineers, Hotel Rice, Houston, Tex., Dec. 8-10.

Highway Research Board, National Academy of Sciences, Washington, D. C., Dec. 12-16.

National Research Council, Washington, D. C., Dec. 13-16.

Associated Equipment Distributors, Stevens Hotel, Chicago, Ill., Jan. 15-19.

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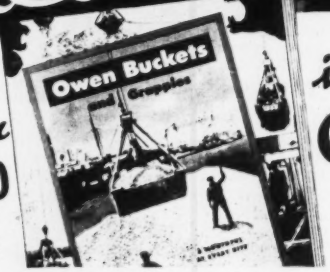

in this **NEW Owen CATALOG**

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Reports and Pamphlets

TANK CAR LOADING AND UNLOADING PLATFORMS—Manual TC-7. Manufacturing Chemists' Assoc., 246 Woodward Building, Washington 5, D. C. 20c.

CONTRACTORS' EQUIPMENT OWNERSHIP EXPENSE — The Associated General Contractors of America, Inc., 1227 Munsey Building, Washington 4, D. C. Single copies $1; $10 per doz.; $65 per 100.

THE NATIONAL APPRENTICESHIP PROGRAM—U. S. Department of Labor, Bureau of Apprenticeship, Washington, Washington, D. C. Available from Superintendent of Documents, Washington, D. C.

ENGINEERING EXPERIMENT STATION NEWS—75th Jubilee Issue—Ohio State University, Columbus, Ohio.

HOUSING—January 1946-July 1949—New York City Housing Authority, New York, N. Y.

SYMPOSIUM ON ASPHALT PAVING MIXTURES—Research Report No. 7-B—Highway Research Board, 2101 Constitution Ave., Washington, D. C.

WELDED STEEL PENSTOCKS—DESIGN AND CONSTRUCTION — Engineering Monograph No. 3. Bureau of Reclamation, Denver, Colorado. 25c.

THE HOLLAND TUNNEL CHEMICAL FIRE —National Board of Fire Underwriters, 85 John St., New York 7, N. Y.

BUILDING COSTS IN THE AFTERMATH OF WAR—The Construction Industry Information Committee of the Producers' Council, 815 Fifteenth St., N. W., Washington, D. C.

PAVEMENT PERFORMANCE—Bulletin No. 20. Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $0.90.

MAINTENANCE COSTS—Bulletin No. 21, Highway Research Board, Washington 25, D. C. $0.15.

MINERAL AGGREGATES—Bibliography No. 6; Annotated Highway Research Board, Washington 25, D. C. $0.60.

PRESTRESSING AND PRECASTING REINFORCED CONCRETE FOR USE IN HIGHWAY BRIDGES AND STRUCTURES—Bibliography No. 7; Annotated and abstracted, Highway Research Board, Washington, 25, D. C. $0.75.

ROADSIDE DEVELOPMENT—1949 Committee Report. Highway Research Board, Washington, 25, D. C. $1.50.

CONDENSATION IN WOOD FRAME WALLS UNDER VARIABLE STATE CONDITIONS OF EXPOSURE—Housing and Home Finance Agency, Division of Standardized Building Codes and Materials, Washington 25, D. C.

HYDRAULICS OF CONDUIT BENDS—Bulletin No. 1. St. Anthony Falls Hydraulic Laboratory, University of Minnesota, Minneapolis, Minn. 50c.

USE OF MODELS IN PLANNING WATER CONTROL WORKS—Circular No. 4. St. Anthony Falls Hydraulic Laboratory, University of Minnesota, Minneapolis, Minn. No charge.

EMPLOYMENT OUTLOOK IN THE BUILDING TRADES—Bulletin No. 967. Bureau of Labor Statistics, U. S. Dept. of Labor, Washington, D. C. Copies may be obtained from the Superintendent of Documents, Washington 25, D. C. 50c.

HANDBOOK OF RECOMMENDED SPECIFICATIONS FOR LATHING, FURRING AND PLASTERING—National Foundation for Lathing and Plastering, 173 W. Madison, Chicago 2, Ill.

PREPARATION AND REVISION OF BUILDING CODES—Report BMS116. National Bureau of Standards. For sale by the Superintendent of Documents, Washington 25, D. C. 15c.

A STUDY OF A BASEBOARD CONVECTOR HEATING SYSTEM IN A TEST BUNGALOW—Report BMS115. National Bureau of Standards. For sale by the Supertendent of Documents, Washington, 25, D. C. 15c.

A HANDBOOK OF INFORMATION ON PROVISIONS OF THE HOUSING ACT OF 1949 —Housing and Home Finance Agency, Washington 25, D. C. For sale by the Superintendent of Documents, Washington 25, D. C. 15c.

LOW COST HOMES FOR THE AVERAGE WAGE EARNER—New York State Division of Housing. 270 Broadway, New York, N. Y. 50c.

THE SIGNIFICANCE OF THE WORK OF THE NEW YORK CITY HOUSING AUTHORITY —The Committee on Housing, New York Chapter, American Institute of Architects, 115 E. 40th St., New York 16, N. Y. $2.50.

THE SILT PROBLEM AT SPRING LAKE-MACOMB, ILL.—Department of Registration and Education, State Water Survey Division, Urbana, Ill.

STUDY OF SANDS IN CONCRETE SUBJECTED TO FREEZING AND THAWING (Series 96)—Circular No. 34—National Sand and Gravel Assoc., 1325 E. Street, N. W., Washington 4, D. C.

THE CARE AND CLEANING OF MARBLE—Marble Institute of America, 108 Forster Ave., Mount Vernon, N. Y.

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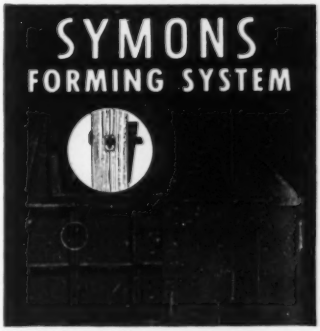

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

November 28

Md., Hyattsville — Washington Suburban Sanitary Comn., Hamilton St., approx. 28,000 ft. 20-to 42-in. supply line from Columbia Pike near Paint Branch to Wheaton, Montgomery Co., Contr. 695-W. Plans deposit $10. Extended date. CD 11/3.

LOW BIDDERS

Calif., Eureka — City, City Hall, Nov. 1, waterlines in D, F, L, W, Dollison, Harris and Bolbeer Sts., from Baldwin- Straub Corp., 26 Francisco Blvd., San Rafael, **$167,349.**

Mo., St. Louis—City, Bd. P. Service, Frank J. McDevitt, pres., 304 City Hall, 12-and Market Sts., Zone 1, cleaning, repairing, lining with cement mortar 3,132 lin. ft. 49 in. Conduit 1, Forest Park, and 13,935 lin. ft. 36 in. steel watermain in May and Chippewa Sts., Broadway, Sulphur, Hampton and Tamma Aves., to Centaline Corp., 140 Cedar St., New York, N. Y., **$67,044.** Est. $70,000. Bids 10/11. CD 10/18, under LB.

Mont., Helena—City, City Hall, 24,000 ft. watermains, etc. from Rushlight Automatic Sprinkler Co., 55 N.E. Farragut St., Portland, Ore., **$125,957.** CD 7/28.

Wis., South Milwaukee—City, Oct. 26, filtration plant addn., from Central Contr. Co., 1229 Algona Blvd., Oshkosh, **$219,100.** CD 10/3.

CONTRACTS AWARDED

Ariz., Phoenix—City, First Ave. and Washington St., installing 18,000 ft. 60 in. concrete pipe for city water intake sys. to Arizona Sand & Rock Co., S 19 St., **$566,215.** Bids 9/27, awarded 10/6. CD 8/31.

Fla., Daytona Beach—City, 7 wells and expanding WW sys., to Frank Constr. Co., Daytona Beach, **$103,000.**

Ind., Milan—Town Bd., filtration plant, to H. & P. H. Hogue, 26 Broadway, Indianapolis, **$98,774.** Est. $100,000. CD 9/29.

Ont., Clifford—Municipality, WW sys., to Scott Brothers, Ripley, **$50,000.** Bids 9/6. CD 8/29.

Ont., Ridgeway—Berties Twp., K. Ellsworth, clk., Ridgeway. WW sys. to Carroll Sharpe Constr. Co., Ridgeway. Approx. **$104,000.** Bids 10/20. CD 10/12.

Que., Asbestos—Municipality, watermains, day labor, **$35,000.** Z. Laglais, 105 Mountain Hill, Quebec City, engr. CD 1/21.

Que., Ste. Foye — Municipality, J. Morin, secy., pumping station at La'Suete, reservoir on heights here, installing watermains, etc., to Eastern Canada Constr. Co., Registered, 513 King St. W., Sherbrooke. Approx. **$880,000.** CD 8/12.

Que., St. Jean Baptiste — Municipality, watermains in 15 and 16 Avenues, day labor, **$70,000.**

SEWERS, WASTE DISPOSAL

BIDS ASKED

November 21

Ont., Cornwall—V. A. MacDonald, R. R. 1, Mille Roche, rein.-con. sewage pump station, etc., Mille Roche for Cornwall Twp., Mille Roche L. P. Stidwill, 34 Second St., engr. CD 2/18/46.

LOW BIDDERS

Calif., Madera—City, City Hall, Oct. 31, activated sludge treatment plant, from Rolandi & Sutton, 617 Montgomery St., San Francisco, **$128,750.** CD 10/12.

Calif., Stockton — Pacific Gardens Sanitary Dist., c/o San Joaquin Co., Courthouse, Oct. 31, sanitary sewers and sewage disposal works, from Pisano Bros., 1780 Moornark Ave., San Jose, Schedule 1, 2 and 3, **$107,119.** CD 10/19.

Conn., Bridgeport—City, Jasper McLevy, mayor, City Hall, Oct. 28, sewage disposal plant, incl. sludge storage tanks, vacuum filters, incinerator, renovate 7 tide gates, Bostwick Ave. Plant, West End from Harry Maring, Jr., Inc., 536 Lindley St., **$554,710.** CD 10/5.

Fla., Tampa—Bd. Representatives, City of Tampa, Sept. 28, Divisions G1, G2, and G3, Krause Street Pumping Station, from Lewis & McDowell, Inc., 255 Madison Ave., New York, N. Y., **$178,455.** CD 9/14.

Ill., Chicago—City, Dpt. Purchases, Contracts & Supplies, City Hall, Oct. 31, sewer, auxiliary outlet sewers, Imlay St. sys., from Santucci Constr. Co., 5044 Carl St., Skokie, **$508,412.** CD 10/26.

Md., Towson—Comrs. Baltimore Co., Courthouse, Oct. 31, 1,073 ft. 15-to 30-in. concrete culvert pipe, 2,155 cu. yd. concrete rectangular drains, 35 inlets and catch basins, 14th Elec. Dist., Contr. 178-D, from Peter D'Adamo & Son, 2441 N. Charles St., Baltimore, **$113,551.** CD 10/19.

N. Y., Croton-on-Hudson—At Office Albert Rozell, mayor, and Bd. Trustees, Municipal Bldg., Van Wyck St., Oct. 25, Contr. 1, sewerage sys.; Contr. 111, subaqueous outfall sewer, from Berlanti Constr. Co., Inc., 15 Oakland Ave., Harrison. **$219,668.** CD 9/22.

Wash., Spokane—City, Mac Hall, rejected bids Oct. 20, Division F, Chestnut St. Section of intercepting sewerage sys., L. B. **$611,794.** CD 10/26, under LB.

CONTRACTS AWARDED

●**N. Y., New York**—Dpt. P. Wks., Municipal Bldg., Zone 7, general contract Hunts Point Sewage Treatment Works, to J. Rich Steers, Inc., 17 Battery Pl., Zone 4, **$13,577,355**; electrical work, to J. Livingston & Co., 101 Park Ave., Zone 17, **$1,062,000.** Bids 10/18. CD 10/20, under LB.

Que., Montreal—Municipality, sewers, Carlton Ave., Jeanne Mane, Liege, Boyce and Marseille Sts., to Spino Constr. Ltd., 10156 Blvd. St. Lawrence St., **$92,642**; Clarke De Reimo, Riopel and Doherty Sts., to James Accurso, Inc., 10150 Blvd. St. Lawrence St., **$57,709.**

BRIDGES

LOW BIDDERS

Connecticut—State, G. Albert Hill, hy. comr., Hartford, Oct. 31, 92 ft. bridge Shelton-Derby-Ansonia Expressway, incl. 550 ft. pavement Coram Ave., Shelton, from Mariani Constr. Co., 222 Forbes Ave., New Haven, **$89,026.** CD 8/20.

O., Cleveland—City, City Hall, Oct. 27, repairing Abbey Ave. Bridge, incl. general repairs to present bridge, new concrete deck, etc., from Vogt & Conant, Inc., 1585 E. 40 St., **$578,000.** Est. $800,000. J. M. Heffelfinger, city engr.

CONTRACTS AWARDED

●**New York**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, elimination of grade crossing of N. Y. C. R. R. with Erie St. West Seneca St., Church St. and Terrace in city of Buffalo, 2.34 mi. P. S. C. 5472, Erie Co., to C. B. Moon & Ferguson & Edmondson Co., 3424 Carnegie Ave., Cleveland, O., **$1,104,022.** Bids 10/19. CD 10/21, under LB.

New York—Bureau Contracts & Accounts, Albany, Vestal Avenue Bypass from Pennsylvania Ave. westward for 1.81 mi. to west city line, Broome Co., to White Oak Excavators, Inc., Plainville, Conn., **$974,132.** Bids 9/14. CD 9/19, under LB.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum size or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
● Project of $1,000,000 or over.
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

West Virginia—State Rd. Comn., Charleston, superstructure Star City Bridge 1696 consisting 2 groups continuous steel I-beam spans 51.5 ft.-75.045 ft.-51.5 ft., one group continuous steel I-beam span 68.5 ft.-66.25 ft.-68.5 ft. and one steel truss span of 410 ft. 8 in. incl. Abutment 2, Curtain Wall Abutment 1 and gutters at Abutment 1, over Monongahela River, W. Va., Rt. 3, 92, Fed Aid Proj. F-313 (3), Monongahela Co., to Bethlehem Steel Co., Oliver Bldg., Pittsburgh, Pa., **$476,930.** Bids 10/25, awarded 11/1. two 30 ft., two 120 ft. and one 150 ft. steel girder span St. Albans Bridge over Coal River 1585 north half of superstructure only, Fed. Aid Interstate Proj. F I. 249 (11) and one 45 ft., two 60 ft. and one 113 ft. steel I-beam span Lewis Overhead Bridge 1649 Contr. 2, north half of superstructures only, Fed. Aid Grade Crossing Interstate Proj. FGI 249 (12), both Kanawha Co., to W. R Orders, St. Albans, **$115,996** and **$63,230** respectively. Bids 10/25. Grand total $656,156. CD 10/14.

Quebec—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., bridge to connect Riviere du Loup with Riviere du Loup Pointe, to Alphonse Ratte Les Etroits, Temiscamique County. Approx. **$175,000.** CD 10/28.

STREETS AND ROADS

LOW BIDDERS

Arizona—State Hy. Dpt., Phoenix, improved alignment grading, draining, base aggregate and bit. 7 mi. Globe-Payson Hy., Gila Co., from W. J. Jenson, Prescott, **$262,516.**

Idaho—Bureau Pub. Rds., General Services Admin., 609 Bannock St., Boise, Oct. 25, grading, draining 6.659 mi. Salmon-Montana Line Hy. Proj. 30-C3, D2, Lemhi Co., from Charles Shannon Co., Butte, Mont., **$187,657.** CD 10/17.

CONTRACTS AWARDED

Wisconsin—State Hy. Comn., Madison, grav. or crushed stone base course 9.703 mi. 12-East County Line Rd., S. T. Hy. 21 from Station 0 plus 10 to Station 310 plus 60; from Station 8 plus 13 to Station 404 plus 66.14 from Station 408 plus 60 to Station 516 plus 60 Proj. S. 0500 (11), Monroe Co., to Arthur Overgaard, Elroy, **$73,381.** CD 10/12.

EARTHWORK, WATERWAYS

BIDS ASKED

After November 22

†**Arkansas**—U. S. Eng., 300 Broadway, Little Rock, powerhouse, appurtenances at Bull Shoals Dam, Inv. No. CIVENG 03-050-50-41. Plans deposit $125.

November 29

†**Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, Zone 3, gates, operating machinery and reservation facilities for Catfish Point Control Structure, on Mermentau River in Cameron Parish, approx. 24 mi. upstream from the Gulf of Mexico and approx. 50 mi. southeast of Lake Charles, CIVENG 16-047-50-118.

On or About December 13

†**Iowa**—U. S. Eng., 1709 Jackson St., Omaha, 2, Neb., drainage and sewage facilities, Council Bluffs, Levee Proj., CIVENG 23-066-50-92.

CONTRACTS AWARDED

†**Mississippi and Arkansas**—U. S. Eng., P. O. Box 60, Vicksburg, pile dike constr. Mississippi River, Item D 5-538, R Island 52 Ark., and Tarpley and Miller Bend, Miss., Serial No. CIVENG-22-052-50-46, to Patton-Tully Transportation Co., 1242 N. 2 St., Memphis, Tenn., Lot 2, **$218,470.** Bids 10/5, awarded 10/12. CD 7/26.

†**Mississippi**—U. S. Eng., P. O. Box 60, Vicksburg, Steele Bayou Channel Imprvt. Item St. 32, Mile 30.45 to Mile 33.50, Serial No. CIVENG-22-052-50-36, Issaquena Co., to D. G. Wilson & Co., P. O. Box 1197, Shreveport, La., **$85,300.** Bids 9/27, awarded 10/17. CD 9/7.

†**Mississippi**—U. S. Eng., P. O. Box 60, Vicksburg, triangular frame retard constr., Mississippi River, Item R 490.7 L, Mayersville, Serial No. CIVENG-22-052-50-39, to Patton-Tully Transportation Co., 1242 N. 2 St., Memphis, Tenn., **$117,625.** Bids 9/27, awarded 10/10. CD 9/8.

†**New York**—U. S. Eng., Niagara and Bridge Sts., Buffalo, Zone 7, deepening Buffalo River, second stage, Buffalo Harbor, CIVENG-30-023-50-9, to Candler Bass, Inc., Birmingham, Mich., **$492,171.** Bids 10/18, awarded 10/21. CD 9/21.

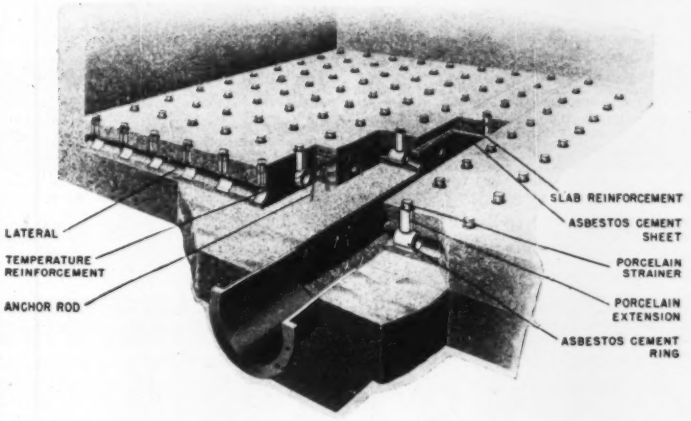
†**West Virginia**—U. S. Eng., Huntington, Zone 18, sealing abandoned coal mine at dam site, Sutton Reservoir, Elk River, Serial No. CIVENG-46-022-50-28, to Agnew Constr. Co., Ronceverte **$81,428.** Bids 10/11, awarded 10/18. CD 9/16.

(Continued on page 72)

Attention— All gravity filter Plant Engineers!

THE NEW PERMUTIT® MONOCRETE UNDERDRAIN

Easy to install... non-corrodible!



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- **All parts of the underdrain are non-corrodible.**
- **All strainers are located in the same horizontal plane.**
- **Large laterals and header assure uniform collection and distribution of water.**
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Permutit

WATER CONDITIONING HEADQUARTERS FOR OVER 35 YEARS

(Continued from page 70)

AIRPORTS AND AIRBASES

CONTRACTS AWARDED

Tenn., Cookeville — ADMINISTRATION BLDG.—Putnam Co., Cookeville, administration bldg. at Putnam County Airport, to Tennessee Constr. Co., Monterey.

PUBLIC BUILDINGS

BIDS ASKED

November 22

N. Y., East Setauket—SCHOOL—Bd. Educ., Union Free School Dist. 2, East Setauket, school. Plans deposit $20. Harold O. Fullerton, 152 Washington Ave., Albany, archt. CD 7/9/48.

●**Que., Montreal**—HIGH SCHOOL—A. H. Milney, secy. Protestant School Bd. Comrs., 3460 McTavish St., Rosemount High School, Beaubieu St., Approx. $1,762,500. Harott, Marshall, Montgomery & Merrett, Canada Cement Bldg., archts. L. Sheeter, Canada Cement Bldg., engr. CD 3/22/48.

December 7

Calif., San Francisco — MEDICAL RESEARCH—Bd. Regents, University of California, Berkeley, (1) general heating, ventilating plumbing and electrical work and (2) elevator work, 4 story 15,000 sq. ft. rein.-con. Medical Research Bldg. Addn. 2 at University of California Medical Center. Approx. $250,000. Plans deposit $50. Blanchard & Maher, 369 Pine St., archts. Keller & Gannon, 126 Post St., engrs.

December 13

†**Pa., Aspinwall**—HOSPITAL—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., altering Connecting Corridor No. 7 to 1-17, for veterans hospital, Spec. 4954.

LOW BIDDERS

N. C., North Wilkesboro — HOSPITAL — Wilkes General Hospital, J. R. Hix, chn., North Wilkesboro, Nov. 1, 100 bed hospital, from P. S. West Constr. Co., Statesville, $551,200. CD 10/5.

N. Y., Clifton Springs—SCHOOL—Bd. Educ., School Dist. 2, Clifton Springs, rejected bids Oct. 5, school addn., alterations, $500,000. CD 9/26.

CONTRACTS AWARDED

Conn., Durham—SCHOOL—Town of Durham Bd. Selectmen, Town Hall, brick, cinder block school addn., to Smith Constr. Co., Inc., 101 Water St., Derby. Approx. $250,000. CD 9/9.

●**N. Y., Elmira**—DINING ROOM, etc.—Dpt. P. Wks., Albany, general contract Bldg. 16, dining room and kitchen, dry and cold storage bldg. at Elmira Reformatory, to F. D. Rich Co., Inc., 101 Park Ave., New York, Zone 17, $1 013,000. Bids 9/28. CD 10/3, under LB.

Ont., Sault Ste. Marie—ARMORY—Canadian Commercial Corp., 70 Lyon St., Ottawa, armory, to Pigott Constr. Co. Ltd., Pigott Bldg., Hamilton. Approx. $800,000. Bids 9/14. CD 8/8.

Que., Quebec West—SCHOOL—School Comm., R. Fiamand, secy., 3 story, 51x155 ft., rein.-con. brick, stone, 16 classroom school and residence for teaching brothers, to Ernest Cote, Ltd., 148 Lafayette St., Quebec City. Approx. $250,000. A. Bigonesse 52 Chemin St. Louis, Quebec City, archt.

COMMERCIAL BUILDINGS

BIDS ASKED

Ill., Chicago—APARTMENTS—Foster Hoyne Corp., c/o Harold A. Stahl, archt., 111 W. Monroe St., Zone 3, 20 two story 80x100 ft., brick, frame apartments, Foster and Hoyne Sts., Zone 25, $500,000.

Ill., Melrose Park—SCHOOL—Our Lady of Mt. Carmel, Melrose Park, 2 story, 120x140 ft. brick, concrete, steel school. Chairo & Chairo, 12 N. 5 Ave., Maywood, archts.

SOON LETS CONTRACT

N. Y., New York—GYMNASIUM—Mount St. Michael's Academy, 4300 Murdock Ave., Zone 66, soon lets contract 2 story gymnasium, convent and Murdock Aves., $700,000. James W. O'Connor, 162 E. 37 St., Zone 16, archts. CD 9/23.

CONTRACTS AWARDED

Calif., Sacramento — RESIDENCES — Lawrence Inc., c/o contractor, forty-seven 5 and 6 room residences in Fruitridge Oaks District, to Geo. W. Reed, 1217 56 St., Approx., $367,400. CD 6/10/48.

Conn., Middletown — HOUSING — Morris Haffel, Main St., 50 frame houses, Pine St. Extension Development. Owner builds. Approx. $100,000. CD 11-1.

Conn. Willimantic — HOUSES — American Screw Co., W. Main St., 30 single frame houses, Company Development, Owner builds, $250,000. CD 4/27.

●**N. C., Fort Bragg**—HOUSING—Dpt. of Army, 3rd Army Headquarters, Atlanta, Ga., construct, finance and manage 1,000 rental housing units on west side of Hy. 87 on Military Reservation, to T. A. Loving & Co., Bank of Wayne Bldg., Goldsboro, and W. H. Weaver Constr. Co., Inc., Greensboro, $10,000,000.

●**O., Fairview Park**—HOMES—Hauer & Barnow, 9746 Lorain Ave., Cleveland, 100 one story, bsmnt, frame homes, W. 222, 223, 217, 224 and 227 Sts., separate contracts. Approx. $1,000,000. CD 8/3.

Ont., Windsor—HOUSES—Economy Home Builders, 2132 Victoria St., 100 houses at Parkwood and Woodlawn Area, own forces. Approx. $550,000.

INDUSTRIAL BUILDINGS

CONTRACTS AWARDED

Calif., Napa — FACTORY — Cameron Shirt Co., Oak St., reconstructing garment factory to E. S. McKittrick Co., 610 16 St., Oakland, Approx. $78,000. CD 10/8/46.

Wash., Seattle—PLANT—Seidelhuber Iron & Bronze Wks. Inc., Duwamish Ave. near Spokane St., 40x240 ft. iron and bronze plant addn., to Leckenby Structural Steel Co., 2745 11 Ave. S. W., Approx. $100,000. CD 6/6/46.

Que., Hull—FACTORY—Primco Ltd., 14 Reboul St., 1 story factory, Gatineau Rd., to Dee Jay Constr. Co., 7192 Grand Ave., Montreal. Approx. $100,000. E & B. Cowan, 1499 Mackay St., Montreal, engrs. CD 10/28.

Que., Montreal—GARAGE, etc.—Stinberg's Ltd., 5400 Hochbalaga St., 1 story, 77x202 ft., rein.-con., brick, structural steel garage and 60x120 ft. workshop, day labor. $125,000 S. Comber & Son, 4444 W. Sherbrooke St., archts.

UNCLASSIFIED

BIDS ASKED

December 20

Neb., North Platte — SWIMMING POOL — City, swimming pool, etc. $135,000. C. C. Coursey, North Platte, archt. CD 10/18.

LOW BIDDERS

Calif., Hollister—GRANDSTAND—San Benito Co. Fair Assn., Courthouse, Oct. 27, 2,800 seating concrete grandstand at County Fairgrounds, from Geo. Renz, Rt. 1, Box 6, Gilroy, $176,880. CD 9/29.

O., Canton — STADIUM, etc. — Canton Bd. Educ., 618 High Ave. N. W., Oct. 28, stadium and field house, from Melbourne Bros. Constr. Co., Mellett Bldg., $398,800. Est. $350,000. CD 10/18.

●**Que., Montreal**—SHED, etc.—National Harbor Line, West Block, Ottawa, Ont., Shed 10 exten. on downstream outer end of King Edward Pier, Montreal Harbor, from Foundation Co. of Canada Ltd., 1909 Sherbrooke St. W., Approx. $115,950; reconstruction upstream face of Jacques Cartier Pier, Montreal Harbor, from Pentagon Constr. Co., Ltd., 1225 Bishop St., Approx. $928,897. CD 10/18.

CONTRACTS AWARDED

●**Idaho and Washington**—PETROLEUM PIPELINE—Salt Lake Pipeline Co., Utah Oil Bldg., Salt Lake City, Utah, steel petroleum pipeline from Boise, Idaho to Pasco, Wash., to Oklahoma Contg. Co., Merchants Bank Bldg., Dallas, Tex., and Grafe-Callahan Constr. Co., 714 W. Olymic St., Los Angeles, Calif., Approx. $6,000,000.

Nebraska—RURAL DISTRIBUTION LINES —Wayne County Rural Public Power Dist., Wayne, 143 mi. rural distr. lines, Wayne and Pierce Counties, to Emil Pupsky, Wayne, $176,287. Bids 10/27. CD 10/16.

PROPOSED PROJECTS

WATER SUPPLY

Ill., Woodstock—City, City Hall, 3 story, 55x125 ft., water treatment plant, $450,000. Baxter Nelson & Woodman, 122 N. Williams St., Crystal Lake, engrs. CD 6/3.

●**O., Toledo**—City, George Van Dorp, city water comr., exten. trunk mains; 24 in. main from end of W. Bancroft St., 36 in. main north to Groveland Rd.; 72 in. main from Collins Park pumping station along Erie to Front Sts., where main would cross Maumee River; 48 in. main from W. Toledo terminus of the 72 in. trunk line parallel to Penn. R.R. connecting with present trunk main at Superior and Front Sts.; 48 in. main from Chase to Cherry Sts.; 48 in. main from E. Central Ave. to Manhattan Blvd.; 36 in. main out Stickney Ave. across Ottawa River then west to Jackman Rd.; 12 in. main from 102 St. to culminate in 500,000 gal. elevated tank in Point Pl. area, $4,000,000. CD 4/8.

Wis., Lake (P. O. Milwaukee)—Town of Lake, 4001 S. 6 St., Zone 7, water filteration plant, incl. 1 mi. 36 in. c.i. pipe intake in Lake Michigan, $961,905. Melvin Fiss, c/o owner engr. Darby, Bogner & Assoc., 759 N. Milwaukee St., Zone 2, archts. and engrs.

Ont., Lindsay—Town, W. R. Allely, clk., piping drinking water from Lake Cameron or Balsom Lake to Lindsay, pumping station at lake end of line and pumping station addn. at Lindsay. Approx. $500,000. R. Mitchell, c/o owner, engr. CD 9/19/45.

Sask., Estevan—Municipality, watermains, $50,000; 300,000 gal. underground water storage tank, $75,000. F. M. Gray, Estevan, engr. CD 7/20/45.

SEWERS, WASTE DISPOSAL

●**Ky., Covington**—North Sanitary Dist. 1, 7 Pike St., sewage disposal plant and sys., part of Anti-stream pollution program Ohio River, $4,000,000. Vogt, Ivers & Seaman & Assoc., 2 Natl. Bank Bldg., Cincinnati, O., consult. engrs.

Mo., Seymour—City, voted $69,500 bonds for sewerage sys. and sewage disposal plant and $10,000 bonds for water sys. extens. CD 10/27.

N. J., Woodbine—Woodbine Boro sewerage sys., $250,000. William L. Rice, 2310 Central Ave., Wildwood, consult. engr. CD 6/6/47.

Tex., San Antonio—City, City Hall, Military Plaza, garbage incinerator, at old incinerator on Brazos St. $300,000. W. W. Toxey, city engr. CD 3/24.

Tex., Weslaco—City, bond election Dec. 17, sewage disposal, $50,000; storm and sanitary sewers, $50,000. Sigler, Clark & Winston, Box 428, Weslaco, consult. engrs.

Wash., Anacortes—City, City Hall, sewage disposal plant and rebuilding system, $100,000. Gibney & Wright, Mount Vernon, and H. Sisler Kirkland, consult. engrs. CD 7/26/45.

Wash., Cle Elum—City, City Hall, reconstr. sewerage sys. and constr. disposal plant, $200,000. D. C. Griffin & Assoc., Lloyd Bldg., Seattle, Zone 1, consult. engrs. CD 7/30/45.

Wis., Lake (P. O. Milwaukee) — Town of Lake, 4001 S. 6 St., Zone 7, 4,059 ft. 30 and 36 in. vitra. clay sanitary sewer in W. Plainfield Ave. and S. 13 St. from S. 20 St. to W. Bolivar Ave. $130,000. Melvin Fiss, city engr.

BRIDGES

●**Ill., Chicago**—Cook County Hy. Dpt., Cook Co. Bldg.,

To be constructed 1950

Bridge Skokie, Church St. N. Branch Chicago River, $100,000.

equestrian underpass, F.P. Devon Ave., Forest Preserve, $15,000.

bridge, approaches Niles Howard St. North branch Chicago River, $130,000.

Bridge Skokie, Oakton St. N. Shore Channel, $150,000.

grade separation Torrence Ave MC, IHB, B&OCT R.R., $400,000.

Bridge Broadview, 25 Ave., Addison Creek, $175,000.

Underpass Broadview, 25 Ave., I.C. R.R., $175,000.

Bridge F.P. 25 Ave., Salt Creek, $130,000.

To be constructed 1951

grade separation, 87 St. B. & O., P.C.C. & St. L. R.R. near Damen, $650,000.

bridge, Franklin Pk., Fullerton Ave., Silver Creek, $25,000.

grade separation, Kedzie Ave. B&OCT. R.R. (near 127 St.), $210,000.

underpass, Posen Robbins, Bl. IS, Kedzie Ave., CRI & P R.R. $175,000.

bridge, Kedzie Ave., Sag Channel, $400,000.

underpass, Cicero, 31 St., IHB R.R. east of Cicero Ave., $1,040,000.

To be constructed 1952

grade separation, Maywood, 5 Ave. C&NW Ry. near Lake St., $275,000.

grade separation, Maywood, 1st Ave. C&NW Ry. near Lake St., $250,000.

Bridge Niles, Howard St. N. Shore Channel, $150,000.

grade separation near Armitage, Narragansett Ave. CM St P & P Ry., $140,000.

3 culverts, 171 St. and 80 Ave., Midlothian Creek, $55,000.

bridge, 127 St., Sag Channel, $320,000.

bridge, Robrson Rd., Poplar Creek, $80,000.

grade separation, 79 St. GTW R.R. near Central Pk., $275,000.

To be constructed 1953

culverts, 82, 104 and 108 Aves., Tinley Creek-Marley Creek, $40,000.

grade separation, Maywood, 5 Ave. Soo Line near North Ave., $200,000.

bridge, grade separation pavement, Lawndale, 55 St. (Lawndale Ave.) Joliet Rd. to Archer Ave., $700,000.

grade separation, Maywood, 1 Ave. Soo Line near North Ave., $200,000.

grade separation, Maywood, 1 Ave., C&AE, CTW near Madison, $300,000.

3 multi-plate arches Flossmoor Rd. between Ridgeland and Central Ave. $75,000.

bridge and retaining wall, Harlem Ave., Hickory Creek, $67,000.

bridge and grade separation, Blue Island, Western Ave. CRI&P R.R., Sag Channel, $1,250,000.

To be constructed 1954

bridge Aptakisic Rd., Buffalo Creek, $50,000.

bridge Central Ave., drainage ditch N. of Flossmoor Rd., $25,000.

bridge Central Ave., Midlothian Creek, $25,000.

grade separation, Elmwood Pk. Grand Ave. CM ST. P & P R.R. near 77 St. $460,000.

bridge Harlem Ave., Sag Channel, **$420,000.**
grade separation, Harlem Ave., South Park Ave. GT RR and B & OCT R.R. near 153 St., **$400,000.**
grade separation, Blue Island, Vermont St., GTW, B&OCT R.R., **$200,000.**

N. J., Trenton—Bd. Freeholders Mercer Co., Courthouse, bridge carrying Spruce St. over Shabunkunk River. Approx. **$75,000.** bridge over Millstone River. Approx. **$70,000.** Edward L. Mount, co. engr.

●**Tex., Dallas**—City, City Hall, Main and Harwood Sts., underpass at MKT, Ry. on Skillman St. **$150,000;** No. 1, steel, concrete bridge, Hampton St. **$100,000;** No. 2, concrete, steel bridge, Hampton St. **$100,000;** underpass NW Hy. off Skillman St. **$250,000;** East Approach to New Forest Ave. Bridge, **$350,000;** underpass at T. & P. Ry. crossing off Military Dr. **$150,000,** R. B. Thomas, city engr.

STREETS AND ROADS

●**Ill., Chicago**—Cook County Hy. Dpt., Cook County Bldg.,

To be constructed 1950

pavements, Chicago Heights, Ashland Ave., Dixie Hy. to Lincoln Hy. **$250,000.**
2 mi. Central Ave., 95 to 79 Sts., Oaklawn, **$250,000.**
0.5 mi. Glenview Rd., CNS & M RR to Hibbard Rd., Glenview, Willmette, relocation, **$50,000.**
1.2 mi. Grand Ave., Mannheim Rd. to Eddington St., Franklin Pk., FAS **$60,000.**
1 mi. Howard St., Cicero Ave. to Pulaski Rd., Skokie, **$80,000.**
2.1 mi. Irving Park Rd., Austin Ave. to Pulaski Rd., **$65,000.**
1.2 mi. Kirchoff Rd., Wilke Rd. to Arlington Heights Rd., Arlington Heights, **$94,000.**
2 mi. Mt. Prospect Rd., Oakton St. to Golf Rd., **$165,000.**
0.7 mi. Reigle Rd., Dixie Hy. to Joe Orr Rd., Chicago Heights, **$105,000.**
1.15 mi. Schaumburg Rd., Chicago-Elgin Rd. to Sutton Rd., **$80,000.**
grading, drainage 2.15 mi. Southwest (I & M) Superhighway, Cicero to Kedzie Ave., **$900,000.**
0.1 mi. State St. Pt. 523 ft. S. of Glenwood-Dyer Rd. to Glenwood-Dyer Rd., bridge incl. Glenwood, **$71,000.**
Tri-State Hy. (ROW only), **$100,000.**
1.05 mi. W. Bartlett Rd., Sutton to Bartlett Rds., Bartlett, **$68,000.**
1.5 mi. Western Ave., Steger Rd. to 26 St., Park Forest FAS to Sauk, **$225,000.**
1 mi. Wilke Rd. Kirchoff Rd. to Euclid Ave., Arlington Heights, **$80,000.**
railway grade crossing imprvs. **$75,000.**
drainage constr. **$75,000.**

To be constructed 1951

pavements 0.8 mi. Canfield Rd., Higgins Rd. to Devon Ave., Park Ridge, **$120,000.**
1.3 mi. Church St., Waukegan Rd. to Austin Ave., Morton Grove F. P. **$78,000.**
2.5 mi. River Road Parkway Addison St. to Bryn Mawr Ave., Schiller Pk., **$375,000.**
2.15 mi. Southwest (I & M) Superhighway, Cicero to Kedzie Aves. **$1,000,000.**
1 mi. State St., Lincoln Hy. to Joe Orr Rd., Chicago Heights, **$160,000.**
Tri-State Hy. (ROW only), **$100,000.**
railway grade crossing imprvs., **$75,000.**
drainage constr., **$75,000.**

To be constructed 1952

0.8 mi. Central Ave., Archer Ave. to 47 St., **$103,000.**
2 mi. Central Ave., 111 to 95 Sts., Oaklawn, Chicago Heights, **$255,000.**
1.7 mi. Forest Way, Tower Rd. to Dundee Rd., Winnetka, Glencoe, **$150,000.**
1 mi. 47 St., Central Ave. to Cicero Ave., **$140,000.**
0.8 mi. Foster Ave., Gettysburg St., Higgins Rd. to Avondale Ave., **$210,000.**
2.1 mi. Kedzie Ave., George Brennan Hy. to Rexford Rd. Robbins, Posen, Midlothian, Markham, **$340,000.**
0.7 mi. Kedzie Ave., 133 St. to Wireton Rd., **$120,000.**
0.25 mi. 139 St., Cooper St. (Blue Island) to Thornton Rd., Blue Island, Dixmoor, **$25,000.**
2.5 mi. River Rd. Parkway, Addison St. to Bryn Mawr Ave., Schiller Park, **$375,000.**
1.6 mi. State St., Sauk Trail to Lincoln Hy., East Chicago Heights, Chicago Heights, **$128,000.**
0.5 mi. 31 St., Cicero to Kostner Aves., Cicero, **$70,000.**
Tri-State Hy. (ROW only), **$100,000.**
1.5 mi. 25 Ave., 26 St. to Roosevelt Rd., Broadview, **$120,000.**
1.6 mi. Walter Ave., Sanders to Pfingston Rds., **$96,000.**
2.1 mi. West Bartlett Rd., Gifford to Sutton Rds., Bartlett, **$126,000.**
1 mi. Woodside Rd. Des Plaines, Longcommon Rd. to 26 St., Riverside, North Riverside, **$180,000.**
railway grade crossing imprvs., **$75,000.**
drainage constr., **$75,000.**

To be constructed 1953

pavement 0.75 mi. Belmont Ave., Ruby St. to Des Plaines River Rd., Franklin Pk., River Grove, **$90,000.**

0.9 mi. Central Ave., Devon to Touny Aves., Niles, **$150,000.**
0.9 mi. Howard St., Pulaski Rd. to McCormick Blvd., Skokie, **$200,000.**
1 mi. Lehigh Ave., Elm to Church Sts., realignment Morton Grove, **$80,000.**
1 mi. 103 St., Central to Cicero Aves., Oaklawn, Chicago Ridge, **$155,000.**
1 mi. Pulaski Rd., 31 St. to Cermak Rd., **$150,000.**
0.9 mi. State St., Steger Rd. to Sauk Trail, S. Chicago Heights, **$54,000.**
1 mi. Thornton-Blue Island Rd. Chatham St. to Ashland Ave., Blue Island, Dixmoor, **$100,000.**
Tri-State Hy. (ROW only), **$100,000.**
1.8 mi. 26 St., Western Ave. to Dixie Hy., Chicago Heights, S. Chicago Heights Park Forest, **$270,000.**
1 mi. 26 St., Des Plaines Ave. to Harlem Ave., North Riverside, Riverside, **$110,000.**
railway grade crossing imprvs., **$75,000.**
drainage constr. **$75,000.**

To be constructed 1954

pavements 2.5 mi. 55 St., Cook-DuPage Rd. to LaGrange Rd., Western Spring, **$425,000.**
1 mi. 47 St., Kedzie Ave. to Western Ave., **$275,000.**
1 mi. Fullerton Ave., Mannheim Rd. to 25 Ave., Franklin Park, **$60,000.**
2 mi. Fullerton Ave., Cicero to Kedzie Aves., **$550,000.**
0.75 mi. 76 St., Jeffery to Colfax Aves., **$208,000.**
Tri-State Hy. (ROW only), **$100,000.**
2.65 mi. Tri-State Hy. 111 St. to Mc Carthy Rd., **$265,000.**
3 mi. Tri-State Hy., Oakton St. to Central Rd., **$300,000.**
2.5 mi. Western Ave., 54 to 34 Sts., **$125,000.**
railway grade crossing imprvs., **$75,000.**
drainage constr., **$75,000.**

Ill., Paxton—City, voted **$275,000** bonds, blacktopping several main streets and nearly all other semi-improved or unimproved streets within city limits.

Minn., Minneapolis—City, C. C. Swanson, clk., City Hall, resurf. Riverside Ave. from 7 St. to 27 Ave. S., **$50,000;** repave 4 Ave. S. from 28 to 38 Sts., **$100,000.** H. Erickson, city engr.

●**Tex., Dallas**—City, City Hall, Main and Harwood Sts., paving from city limits to Hy. 246, **$75,000;** Sylvan St. exten. from Fort Worth Ave. northward to city limits, **$66,000;** imprv. Oaklawn, near Dal-Hi Stadium to Maple St., incl. overpass at Cotton Belt Ry. **$248,000;** asph. paving Military Dr., city limits to East Pike, **$540,000;** wid'n, asph. paving 8 St., city limits to Corinth St. **$50,000;** Jefferson Ave. imprvs., city limits to Cockrell Hill and to Santa Fe Ry **$50,000;** asph. paving and imprv., Hampton-Inwood, Davis St. to city limits, **$170,000;** asph. paving Hampton from Clarendon to U. S. Hy. 67, **$443,000;** wid'n., asph. paving Inwood Rd. H. Hines Blvd. to Royal Lane, **$1,495,000;** wid'n. drainage 2nd Ave., Harbert St. to city limits, **$135,000;** wid'n., asph. paving Lancaster Rd. from Illinois St. to city limits, **$395,000;** opening Illinois St. Lancaster to Zang, **$413,000;** Freeman Rd. imprvs. and surf. from N. W. Hy. to city limits, **$85,000;** wid'n., paving Skillman St., Mockingbird Lane to city limits, **$345,000,** R. B. Thomas, city engr.

Tex., Hillsboro—Hill Co., Courthouse, Hillsboro, voted $60,000 bonds Oct. 28, construct connecting roads in Lake Whitney area. **$120,000.** CD 7/15.

Tex., San Antonio—Bexar Co., Dan Traugott, comr., Courthouse, road repairing, grading, reconditioning, surf., wooden bridge work, Precinct 1, **$100,000;** Precinct 2, **$125,000;** Precinct 3, **$80,000;** Precinct 4, **$125,000.** CD 7/5.

Tex., San Antonio—E. J. Burke & Sons, 4220 S. Zarzamora St., street grading and paving, East 83rd exten. of Highland Hills, **$100,000.** Harmon & O'Donnell, c/o owners, consult. engrs.

Wash., Seattle—City, County-City Bldg., Zone 4, paving 28 Ave. W. and other streets, **$250,000.** R. W. Finke, city engr.

●**Ont., Toronto**—Municipality, Toronto, Dundas Street exten. **$3,000,000.** City Planning Comn., City Hall, city engr. CD 9/28/43.

EARTHWORK, WATERWAYS

†**Delaware**—U. S. Eng., City Center Bldg., 121 N. Broad St., Phila., Pa., deep water ocean dredging in Delaware Bay, Harbor of Refuge Delaware Bay, near Lewes, **$120,000;** dredging Indian River Inlet and Bay, **$320,000.**

AIRPORTS AND AIRBASES

Del., Wilmington — ADMINISTRATION BLDG., etc.—New Castle Co. Levy Court, Courthouse, plans by Walter Carlson, Penna Bldg., administration and terminal bldg., **$100,000.** CD 10/20.

Idaho, Lewiston — AIRPORT IMPRVS. — City, City Hall, plans by H. Richardson, Lewiston, administration bldg. at airport. **$100,000.**

Sask., Saskatoon — ADMINISTRATION BLDG.—Government of Canada, Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., administration bldg., and addnl. taxi strips, etc. **$200,000.** CD 9/5/46.

LATIN AMERICA

Bolivia—Government of Bolivia, La Paz, plans 200 mi. highway between Cochabamba and Santa Cruz. **$16,000,000.** CD 2/15/48.

Jamaica, Kingston—Government of Jamaica, Kingston, plans cold storage plant. **$300,000.** Colonial Development Corp., Kingston, archt.

Jamaica, Kingston—Syndicate, c/o Colonial Development Bd. Kingston, plans citrus processing plant. **$500,000.**

Mexico, Mexico City—Mexicana Industrial, S. A. Luis Monterrubio, Quintana, mgr., Av. de la Industria, 184, Col. Montezuma, Mexico, D. F., plans wood working machinery factory. **$250,000.**

PUBLIC BUILDINGS

Ark., Newport—SCHOOL—Newport School Bd., Newport, plans by H. Voelcker & Assoc., 1202 Dennis St., Houston, Tex., school, **$350,000.**

Calif., San Diego—SCHOOL—San Diego Unified School Dist., 825 Union St., plans by W. T. Johnson, San Diego Trust & Savings Bldg., 1 and 2 story, rein.-con. school, Diamond and Ingraham Sts., **$250,000.**

Calif., San Jose—HIGH SCHOOL—San Jose Unified School Dist., 408 Almaden St., plans by Clarin Fortsch & Stromquist, 321 Channing Ave., Palo Alto, Herbert Hoover Junior High School addn. **$300,000.** CD 2/27/47.

●**Conn., East Hartford**—HOUSING—Town of East Hartford Housing Auth., 70 Cannon St., 150 family housing units. **$1,500,000.**

Conn., Manchester—SCHOOL—Bd. Educ., Manchester, plans by Keith Sellers Heine, 71 Oxford St., Hartford, 13 room brick, steel school, Middle Turnpike and Broad St. **$350,000.**

Conn., Middletown—HOUSING—City Middletown Housing Auth., Louis W. Johnson, exec. dir., 50 family units. **$450,000.**

●**Conn., New Britain**—HOUSING—City of New Britain Housing Auth., H. F. Fox, chn., 160 housing units. **$1,200,000.**

Del., Middletown — SCHOOL — Middletown School Dist., Middletown, school, **$250,000.**

●**Del., New Castle** — SCHOOL — New Castle Special School Dist., New Castle, voted bonds school bldg. program, **$1,240,000.**

Del., Wilmington — SCHOOL — Alfred I du Pont Special School Dist., Talleyville, Wilmington, voted bonds school addn., **$337,000.** CD 9/23.

Del., Wilmington — SCHOOL — Richardson Park School Dist., Richardson Park, school, **$500,000.**

Idaho, Pocatello—GYMNASIUM, etc.—Idaho State College, plans by Paradise & Hunter, 50 W. Center Ave., gymnasium and fieldhouse, CD 8/29.

Ill., Olney—HOSPITAL—Bd. Supervs. Richland Co., Courthouse, voted **$900,000** bonds, concrete, brick, steel hospital. CD 10/7.

●**Ill., Rockford** — SCHOOL — City, voted **$2,515,000** bonds, 4 schools, gymnasium addns. to 8 others and other imprvs.

Ind., Rockville—NURSES, etc.—State, P. Wks. & Supply Division, W. R. Mybeck, dir., 404 State House, Indianapolis, plans by Vonnegut, Wright & Yeager, 402 Opera House Bldg., Terre Haute, 5 story, brick, stone, structural steel, rein.-con. nurses and employees bldg. addn. to Rockville Sanatorium. **$400,000.** CD 11/25/48.

Ia., Davenport—COURTHOUSE, etc.—City of Davenport and Scott Co., Davenport, plans by Smith, Hinchman & Grylls, Inc., engr.-archt., 1800 Marquette Bldg., Detroit, Mich., joint bldg. for county courthouse and city hall. Approx. **$500,000.** CD 1/6/48.

Ia., Oskaloosa—SCHOOL—Bd. Educ., Oskaloosa, plans by Keffer & Jones, 202 Masonic Temple Bldg., Des Moines, high school addn. **$600,000.**

Ia., Webster City — HOSPITAL — Hamilton Co., Webster City, plans by Dougher, Rich & Woodburn, Garver Bldg., Des Moines, hospital. **$275,000.** CD 3/24.

Kan., Larned—AUDITORIUM, etc.—State Topeka, plans by Roy Finney, N. E. Bldg., Topeka, auditorium and administration bldg., Larned State Hospital, **$350,000.**

Kan., Norton—EMPLOYEES—State, Topeka, plans by Roy Finney, N. E. Bldg., Topeka, employees bldg. at Norton State Hospital, **$325,000.**

Kan., Olathe—SCHOOL—Bd. Educ., Olathe, plans by E. M. Fuller., Natl. Bank Bldg., North Kansas City, Mo., school, **$250,000.**

Ky., Louisville—SHOP—Bd. Educ., Fifth and Hill Sts., plans by Louis & Henry, Starks Bldg., 3 story shop at Hallack Hall, **$400,000.**

La., Benton—SCHOOL—School Bd., Bossier Parish, bond election Nov. 29, school. **$325,000.**

●**Md., College Park**—CHEMICAL RESEARCH PLANT—University of Maryland, Dr. H. C. Byrd, pres., chemical research plant, on campus. **$2,500,000.** CD 7/14.

Mass., Amherst—TURBINE PLANT—Commonwealth of Mass., University of Mass., Amherst, Prof. 206 turbine plant exten., Approx. **$150,000**, Hollis French, 210 South St., Boston, engr. CD 5/2/45.

Mass., Milton—SCHOOL—Town, School Bldg. Comn., plans by Adden-Parker-Clinch-Crimp, 177 State St., Boston, school, off Canton Ave. Approx. **$250,000.**

Mass., Pondville—ADMINISTRATION, etc.—Commonwealth of Massachusetts, Dpt. P. Health, State House, Boston, plans by Adden, Parker, Clinch & Crimp, 177 State St., Boston, Proj. H-203, administration, out-patient, research and laboratory bldg., State Hospital, **$950,000.**

Mass., Westboro—POWER PLANT—Commonwealth of Massachusetts, Youth Service Bd., 41 Mt. Vernon St., Boston, plans by Sturgis Assoc., Inc., 120 Boylston St., Boston, Proj. Y-203, power plant addn., imprvs., Lyman School for Boys. **$138,000.**

Mass., Wrentham — SERVICE — Commonwealth of Massachusetts, Dept. Mental Health, 100 Nashua St., Boston, plans by S. S. Eisenberg, 69 Summer St., Boston, service bldg. addn. Proj. M-217, at State School. **$300,000.**

●**Mich., Ann Arbor**—MEDICAL CENTER—University of Michigan, Ann Arbor, medical center, incl. 5 structures, **$20,000,000.**

●**Minn., Austin**—CITY HALL, etc.—City, J. H. Weiland, clk. and Bd. Comrs., Mower Co. C. M. Hubbard, aud., Austin, combined city hall and courthouse. **$1,000,000.**

●**Minn., St. Paul**—HOUSING—St. Paul Housing & Development Auth., I. Karon, exec. dir., E. 702 First Natl. Bank Bldg., plans by W. M. Ingemann & Assoc., Berglund and W. B. Caving, Jr., 345 Minnesota St., housing units bounded by Maryland Ave., Hazelwood Ave., and Kennard St., plans by Dimond, Haarstick & Lundgren, 416 Endicott Bldg., Slifer & Cone, 442 Endicott Bldg., G. K. Dimond & Assoc., New York Bldg., housing units bounded by Wheelock Parkway, Jackson and Mississippi Sts., and Arlington Ave., **$13,000,000.**

Miss., Jackson—SCHOOL—Jackson Municipal Separate School Distr., plans by Trolio & Liddle, Barnett-Madden Bldg., Junior High School. Approx. **$250,000.** CD 3/3/44.

Neb., Beatrice—WARD—State Bd. Control, Lincoln, ward bldg. **$300,000.**

Neb., Norfolk—HOSPITAL—State Bd. Control, Lincoln, Norfolk State Hospital addn. **$300,000.**

●**N. J., Kearny**—HOUSING—Kearny Housing Auth., Kearny, plans by Kelly & Gruzen, 80 Fifth Ave., New York, 11, N. Y., 600 unit housing. **$5,000,000.**

N. J., Toms River—COURTHOUSE, etc.—Bd. Freeholders Ocean Co. Courthouse, plans by Kelly & Gruzen, 80 Fifth Ave., New York, N. Y., courthouse addns., alterations, **$500,000.** CD. 10/11/46.

N. M., Albuquerque—SCHOOL, etc.—Bd. Educ., Albuquerque, plans by Louis G. Hasseldon, 323 S. 3 St., 20 room masonry Junior High School. **$150,000;** masonry warehouse, **$75,000.** CD 7/24/46.

N. C., Goldsboro—ADMINISTRATION—State Hospital for Insane, J. W. Gaddy, bus. mgr., Goldsboro, plans by A. J. Maxwell, Jr., Borden Bldg., administration bldg. Approx. **$250,000.** CD 5/22/46.

N. C., Greenville—LIBRARY—Eastern Carolina Teachers College, F. D. Duncan, bus. mgr., Greenville, 2 story library, on West Campus. Approx. **$600,000.** CD 11/28/45.

N. D., Grand Forks—ENGINEERING etc.—State Bd. Higher Educ., Bismark, plans by Wells & Denbrook, Northern Pacific Engineering bldg., **$400,000;** women's dormitory, **$400,000.** CD 5/13.

O., Akron—HIGH SCHOOL—Summit Co. Bd. Educ., Bath Richfield Local School Dist., Akron, high school serving combined districts, near here. **$400,000.** CD 11/15/45.

O., Cleveland—HIGH SCHOOL—Bd. Educ., 1380 E. 6 St., plans by Arthur Baer, Administration Bldg., Washington Carver Junior High School, E. 28 St. between Central and Charity Sts. Approx **$250,000.** CD 3/1/43.

●**O., Cleveland**—SERVICE—City, 226 City Hall, plans by Small, Smith & Reeb, 709 Swetland Bldg., 2 story, bsmnt., brick steel service bldg., and hospital addn., 3305 Scranton Rd. **$2,000,000.** John Paul Jones, Carey & Miller, 1740 E. 23 St., mechanical engrs. CD 11/2/44.

O., Strongsville — HIGH SCHOOL — Bd. Educ., c/o G. C. Slansky, Slansky's Nursery, Pearl Rd. & Nova Rd., 2 story, bsmnt., brick, steel high school addn. **$325,000.** Mellonbrook, Foley & Scott, 26 Front St., Berea, archts.

Okla., Walters—POWER PLANT—City, defeated bonds power plant extens. **$100,000.** CD 10/5.

Pa., Phila.—APARTMENT—Phila. Housing Auth., 21 St. and Winter Sts., plans by Walter Antrium & Charles G. Etter Assoc., 117 S. 17 St., apartment, 4 and Walnut Sts., **$750,000.** CD 9/12.

Tex., Angleton—LIGHT PLANT—City, defeated bonds, electric light plant and distr. sys. **$300,000.** Garrett Eng. Co., 5008 Almeda Rd., Houston, consult. engr. (**Correction**—status). CD 10/28.

Tex., Falfurrias — GYMNASIUM, etc. — Brooks County Independent School Dist., Falfurrias, plans by Robert Vogler, 225 Oleander St., Corpus Christi, gymnasium, **$250,000;** stadium, southeast corner adjacent Noble St., **$75,000.** CD 4/12/48.

Tex., Falls City—HIGH SCHOOL—Bd. Educ., Falls City, plans by Herbert S. Kellner, 406 Austin Hy., San Antonio, brick high school, concrete frame and slab fdn. **$250,000** bonds voted.

Tex., Galveston—BUILDING—University of Texas, Bd. Regents, Austin, plans by L. White, c/o owner, remodeling, addns. to medical branch bldg. **$581,000.** CD 1/17/46.

●**Tex., Lubbock**—BUILDINGS—Texas Technological College, Dr. D. M. Wiggins, pres., Lubbock, plans by Atkinson & Atkinson, Lubbock, and Foster & Davis, El Paso, 2 wings or more masonry engineering bldg. **$550,000;** plans by Walsh & Hazelwood, 226 Paramount Bldg., Amarillo, masonry, steel, concrete music hall, **$250,000;** plans by Haynes & Kirby, 19 and Dixie Dr., masonry home economics bldg. **$450,000.** CD 5/19.

●**Tex., Sherman**—HIGH SCHOOL, etc.—Sherman Independent School Dist., Sherman, defeated bonds, high school, **$500,000;** gymnasium-auditorium for Negroes, **$250,000;** school, **$275,000.** George L. Dahl, 120½ Main St., archt. CD 10/13.

Tex., Victoria — SCHOOL — Victoria Independent School Dist., Victoria, voted bonds, school. **$300,000.** Kai J. Leffland, Victoria, archt. CD 10/13.

Wash., Anacortes — HOUSING — Anacortes Housing Auth., Anacortes, 75 housing units, **$250,000.**

Wash., Ellensburg—HOUSING—Ellensburg Housing Auth., Ellensburg, 60 housing units, **$250,000.**

Wash., Longview — HOUSING — Longview Housing Auth., Longview, 125 housing units, **$400,000.**

Wash., Poulsbo — SCHOOL — North Kitsap School Dist. 400, Poulsbo, bond election Dec. 3, school, Kingston-Port Gamble Rd. **$260,000.** W. A. Johnson, First Natl. Bank Bldg., Everett, archt. CD 9/15.

Wash., Seattle — LANGUAGES — University of Washington, 15 Ave. N. E. and E. 40 St., Zone 5, plans by Granger & Thomas, Arcade Bldg., Zone 3, 3 story, bsmnt., masonry languages bldg. **$750,000.** CD 3/17.

B. C., Kelowna—GOVERNMENT—Province of British Columbia, Parliament Bldg., Victoria, rein.-con. government bldg., Approx. **$250,000.**

Ont., Kincardine—SCHOOL—Bd. Educ., Kincardine, school, **$250,000.**

Ont., Orangeville — HIGH SCHOOL — Bd. Educ., W. C. Hopkins, secy., plans by J. D. Kyles, 36 James St. S., Hamilton, L-shaped 64x300 ft., concrete block, brick, steel, high school, concrete block fdns., concrete slab floors, Approx. **$325,000.**

Ont., Toronto—GARAGE—Municipality, garage, 1008 Yonge St. for use by Dpt. Street Cleaning, **$200,000,** Murray Stewart, city engr.

Que., Joliette—ARMORY—J. M. Somerville, secy. Dpt. P. Wks. Hunter Bldg., Ottawa, Ont., plans by G. Brault, c/o owner, armory. Approx. **$250,000.**

Que., Quebec City—RECREATION CENTER—City, J. H. Chouminard, clk., recreation center at Victoria Park, Approx. **$250,000** E. Hamel, c/o owner, engr. CD 6/14/46.

Sask., Estevan — SCHOOL — Municipality, school, **$250,000.** F. M. Gray, Estevan, engr.

COMMERCIAL BUILDINGS

Ala., Birmingham—APARTMENT UNITS—Bradmore Apartments, Inc., c/o Van Keuren Davis & Co., American Life Bldg., 96 apartment units. Approx. **$300,000.**

Ala., Montgomery — CHURCH — St. James Methodist Church, c/o C. H. Lancaster, Jr., archt., 421 Washington St., Montgomery, church, Approx. **$250,000.**

Conn., Berlin—OFFICE—Connecticut Light & Power Co., 36 Pearl St., Hartford, plans by Douglas Orr, 96 Grove St., New Haven 60,000 sq. ft. brick, steel office, Webster Rd. Approx. **$250,000.**

Conn., Middletown — HOUSING — Morris Raffel, Main St., 50 houses, Pine Street Extension. **$100,000.**

Ga., Fort McPherson — HOUSING — Commanding Officer, Headquarters 3rd Army, 225 housing units. Project will be constructed, financed and managed by private company.

●**Ill., Lake Forest** — APARTMENTS — Syndicate, c/o Solomon Axelrod, 105 W. Madison St., Chicago, Zone 3, plans by W. P. Whitney, 3959 N. Lincoln Ave., Chicago, Zone 18, six 140 unit apartments Sheridan and Westleight Rds.; Sheridan and McKinley Rds.; Sheridan Rd. and Jones Place. **$1,250,000.**

Ind., Anderson — EDUCATIONAL UNIT—First Methodist Church, 12 and Jackson Sts., plans by Ernest Watkins, Citizens Bank Bldg., brick, steel, concrete educational unit adjoining present church. **$250,000.**

Ind., Bloomington—APARTMENT—Hillcrest Apartments, Inc., c/o A. M. Strauss, archt., 415 Cal-Wayne Bldg., Fort Wayne, 3 story, T shaped, 103x258 ft., brick, stone, concrete apartment. **$280,000.**

Ind., Hammond—APARTMENT—Superior Homes, Inc., 5317 Hohman Ave., plans by R. R. Vaughn, 6714 Madison Ave., 2 story, bsmnt., 98x237 ft. apartment, 2701-25 Sumner Blvd. **$325,000.**

Ind., Indianapolis—APARTMENT—Leo & Maurice Lippman, 2219 N. Arlington Ave., 2 story, U shaped, brick, concrete apartment, Carvel Ave. between 61 and 62 Sts. **$450,000.** Paul I. Cripe, 533 Lemcke Bldg., architectural engr.

Md., Baltimore—RESIDENCES—Caral Co., Frank Carozza, in charge, 10 W. 25 St., plans by Cyril H. Hebrank, 20 E. Lexington St., 150 two story, bsmnt., brick garden type residences, off Frederick Rd., West Baltimore. **$900,000.** Albert E. Pohmer, 322 N. Charles St., civil engr.

Md., Baltimore — APARTMENTS — Falstaff Apt. Corp., Albert A. Sapero, in charge, 1020 Munsey Bldg., plans by Cyril H. Hebrank, 20 E. Lexington St., 7 groups (118 unit) 2 story, bsmnt., brick, block, garden type apartments. **$800,000.** Albert E. Pohmer, 322 N. Charles St., civil engr.

Md., Baltimore—SCHOOL, etc.—St. Michaels Church, Rev. Wm. F. Sauer, pastor, Willow Ave. and Helair Rd., plans by Murphy & Locraft, 1518 P St. N. W., Wash., D. C., 2 and 4 story brick, stone school, convent and rectory, Saxe, Williar & Robertson, 130 W. Hamilton St., structural engrs., Elser & Akers, 916 N. Charles St., mechanical engr. CD 8/12.

Mass., Boston — HOSPITAL — Peter Bent Brigham Hospital, 721 Huntington Ave., plans by Markust & Nocka, 251 Columbus Ave., 4 story, brick, steel concrete first hospital addn. and 2 story, brick, steel, concrete second hospital addn., approx. **$250,000.**

Neb., Axtell—HOSPITAL—Bethpage Mission, Axtell, plans by O. Z. Cervin, Safety Bldg., Rock Island, Ill., hospital. **$275,000.**

●**Neb., Fort Crook**—DWELLINGS—Strategic Air command Housing Proj., Offutt Field, Fort Crook, 600 dwellings for service personnel. **$6,000,000.**

Neb., Lincoln—DEPARTMENT STORE—R. E. Campbell, 13 and O Sts., plans by Davis & Wilson, 225 Stuart Bldg., department store. **$400,000.**

N. J., Atlantic City—HOTEL—Mayflower Hotel, Tennessee Ave. and Boardwalk, plans by A. L. Brooks, 1616 Pacific Ave., hotel addn. **$250,000.**

N. J., Trenton—APARTMENT—Gerald R. Cahill, 1320 W. State St., plans by William W. Slack, 1401 W. State St., apartment, W. State St. **$250,000.** CD 9/10/48.

N. M., Albuquerque — HOUSING—Fourth Army, San Antonio, Tex., 760 housing units at Sandia Base, project to be constructed, financed and managed by private company.

N. Y., New York—BUILDING ALTERATIONS—Cathedral of St. John the Divine 1047 Amsterdam Ave., New York, Zone 25, plans by Wyeth & King, 70 E. 45 St., New York, Zone 17, building alterations between 110 and 113 Sts. on Amsterdam Ave. **$360,000.**

N. Y., New York—MUSEUM—Museum of Modern Art, 11-15 W. 53 St., Zone 19, plans by Marios A. Contopoulas, 9 E. 45 St., Zone 17, museum alterations. **$300,000.**

N. Y., White Plains—STORE—B. Altman & Co., 5 Ave. and 34 St., New York, suburban branch store on 5½ acre site, Westchester Ave. and Bloomingdale Rd., Approx. **$250,000.**

●**N. C., Raleigh** — RETAIL STORE — Sears, Roebuck Co., Jackson F. Moore, vice pres., 675 Ponce de Leon Ave., Atlanta, Ga., plans by Shutze-Armistead, Candler Bldg., Atlanta, Ga., 75,000 sq. ft. retail store in Cameron Village. **$1,000,000.** CD 3/29.

N. D., Grand Forks—COMMUNITY CENTER—Young Mens Christian Assn., Grand Forks, plans by Green & Anderson, Grand Forks, Y. M. C. A. community center. **$298,000.**

●**O., Dayton**—SHOPPING CENTER—Joseph H. Breitenstrater, c/o Charles A. Hock, archt., 66 Bell St., shopping center, on 12 acre tract, Patterson Rd. and Wilmington Pike. **$2,500,000.**

O., Lakewood — APARTMENT — Evan B. Hamilton, 1737 Euclid Ave., Cleveland, plans by Damon Warley & Assoc., 926 Engineers Bldg., Cleveland, 7 story, bsmnt., brick apartment, Lake Ave. **$300,000.**

O., North College Hill — RESIDENCES — Bayer Bros., Baywood Dr., plans by Lee P. Firth, 3040 Madison Rd., Cincinnati, twenty-four 1½ story, brick residences. **$480,000.**

O., Cincinnati—APARTMENTS—Tiller Bros., 1747 Indiana St., plans by Lee P. Firth, 3040 Madison Rd., 8 two story, 34x44 ft. brick, concrete bsmnt. apartments. **$360,000.**

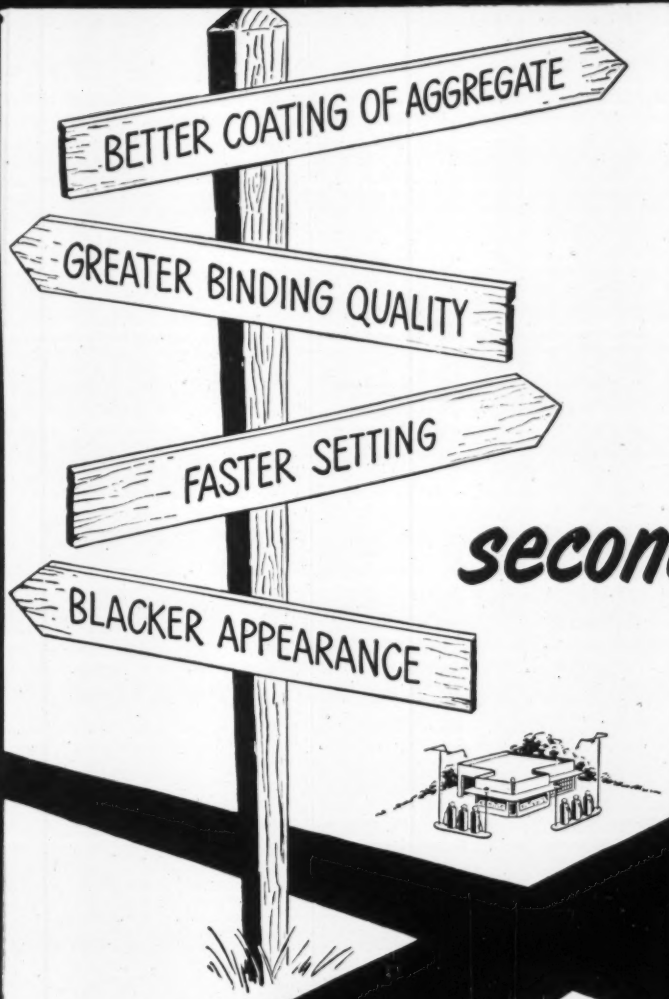
Okla., Fort Sill—HOUSING—Commanding Officer, 4th Army, Fort Sam Houston, Tex., plans 500 units housing. Project will be constructed, financed and managed by private company.

Okla., Oklahoma City — STORE — W. T. Hales Estate, Hales Bldg., plans by J. R. Koberling, Court Arcade Bldg., Tulsa, 106x150 ft. store bldgs., Main and Walker Sts. **$275,000.**

Pa., Meadville—DORMITORY, etc.—Allegheny College, Meadville, dormitory, **$350,000;** administration, **$400,000.**

●**Pa., Phila.**—APARTMENTS—Mayer I. Blum & Sons, 2601 Parkway, 1,800 suite apartment, shopping center and theatre, 90 acre site. **$40,000,000.**

(Continued on page 76)



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(Continued from page 74)

●**Pa., Philia.**—APARTMENT—Mr. & Mrs Donald D. Dodge, 32 Summit Ave., plans by Oscar G. Stonorov, Broad St. Station Bldg., apartment development, Mermaid Lane, etc. **$3,000,000.**

Pa., Philia.—BANK, etc.—Albert M. Greenfield & Co., 1325 Walnut St., bank and office alterations, Broad and Walnut Sts. **$900,000.**

Pa., Philia.—COMMERCIAL DEVELOPMENT—Owner, c/o Harold P. Mueller, engr., 425 Vernon Rd., Jenkintown, commercial development, stores, etc., Cottman and Large Sts. Approx. **$500,000.**

S. D., Hot Springs—HOSPITAL—West River Crippled Childrens Hospital & Polio Center, Hot Springs, hospital, **$350,000,** Frank Lattenser & Sons, 1307 Farnam St., Omaha, consult. engrs. CD 1/12.

●**S. D., Rapid City**—HOUSING—Rapid City Air Force Housing Project, Rapid City, housing. **$2,000,000.**

Tenn., Nashville—DUPLEXES—R. M. Condra, Jr., Maxwell House, 50 duplexes. **$420,-000.**

Tenn., Nashville—DEPARTMENT STORE—Gus Mayer, Ltd., Church St., department store. Approx. **$300,000.**

●**Tex., Baytown**—MERCANTILE—Sears, Roebuck & Co., 4207 Main St., Houston, plans by George L. Dahl, 1920¾ Main St., Dallas, store on 4.2 acre tract on W. Texas Ave. **$1,000,000.** CD 8/17.

Tex., El Paso—HOUSING—Commanding Officer, Fort Sam Houston, 60 housing units at William Beaumont Hospital. Project will be constructed, managed and financed by private company.

Tex., Fort Sam Houston—HOUSING—Commanding Officer, 4th Army, Fort Sam Houston, plans construction of 300 housing units. Project will be constructed, financed and managed by private company.

Tex., Fort Worth—COMMUNITY CENTER—J. E. Foster & Son, 1100 Blk. Summit St., plans by Joseph H. Gaylord, Jr., 504 W. P. Anderson Bldg., W and 2 story, 150x150 ft. brick, stone community center, concrete slab fdn. and frame. **$250,000.**

Tex., Houston — HOUSING — Meadowbrook Housing Co., 7801 Hoeard Dr., housing, Meadowbrook sub-division. **$500,000.**

Tex., Houston — HOUSING — Robertson Constr. Co., 1533 Gardenia St., housing, Lum Terrace, etc. **$250,000.**

●**Tex., Houston**—HOSPITAL—St. Lukes Episcopal Hospital, 6265 Main St., plans by Staub & Rather, 2814 Va. St. and Hiram A. Salisbury, 3501 Buffalo Dr., 7 story bsmnt. **$10** bed hospital, **$4,000,000;** interneers home, **$600,000;** research and teaching addn. **$400,000.** Raymond L. Jenkins, 4316 Blossom St., mechanical engr. CD 12/29.

Tex., Houston—POWER PLANT—St. Luke's Episcopal Hospital, 1910 Crawford St., plans by H. A. Salisbury, 3501 Buffalo Dr., and Staub & Rather, 2814 Virginia St., power plant. **$150,000.** Ray L. Jenkins, 4316 Blossom St., consult. engr. CD 9/7/45.

Tex., Houston — DWELLINGS — Robertson Constr. Co., 7500 Joplin St., 50 addnl. frame dwellings, concrete slab fdn., Holmes Rd. area. **$300,000.**

Tex., Houston—DWELLINGS—United States Constr. Co., 6835 Avenue V, plans by Joseph B. Reynolds, 2518 Times Blvd., 60 addnl. dwellings, Norview Terrace. **$360,000.**

Tex., Lubbock—CHURCH—St. John's Methodist Church, Lubbock, plans by Atcheson & Atcheson, Lubbock, educational church. **$600,000.**

●**Tex., San Antonio** — RESIDENCES — E. J. Burke & Sons, 4220 S. Zarzamora St., plans by W. W. Van Der Heck, c/o owner, 900 single family residences, concrete post or slab fdn. frame. **$5,400,000;** 300 duplexes and 4 unit apartments, **$2,950,000,** in Eastward exten. of Highland Hills. CD 4/13/48.

Tex., San Antonio — HOUSING—Low Cost Homes Building Co., 413 N. Alamo St., frame housing, concrete pier fdn. **$260,000.**

Tex., San Antonio—CHURCH—Manor Baptist Church, 1847 W. Huisache St., plans by Ralph H. Cameron, 1701 Transit Tower, stone, brick, concrete church, slab and pier fnd. **$250,000.**

●**Tex., San Antonio** — DWELLINGS — Frank Robertson, Majestic Bldg., addnl. 62 dwellings, west of St. Marys University. **$425,000;** 27 residences in Bryant Park. **$250,000;** 72 residences, in Bryant Park. **$425,000.**

Tex., San Antonio — DWELLINGS—Haby Seay, Inc., 2420 W. Summit St., 40 dwellings, Jefferson Dist. **$280,000.**

Va., Fort Belvoir—HOUSING—Commanding Officer, Military Dist. of Wash. D. C., plans 350 units housing. Project will be constructed, financed and managed by private company.

●**Wash., Seattle**—STUDENT UNION—Associated Students, University of Washington, E. 40 St. and 15 Ave. N.E., Zone 5, plans by Jones & Bindon, Hoge Bldg., Zone 4, student union bldg. addn. **$1,250,000.** CD 1/12.

Wis., Madison.— SCHOOL — St. Bernard's Catholic Congregaion, Madison, plans by John J. Flad & Assoc., archt. and consult. engr., 908 W. Johnson., school **$300,000.**

Ont., Cornwall—ORPHANAGE, etc.—Reverend Sisters of St. Joseph, c/o Rev. R. Brodeur, Bishop of Alexandria, orphanage and school. **$250,000.**

Que., Cap de la Madelaine—CHURCH—Roman Catholic Parish of St. Madelaine, Cap de la Madelaine, church. **$250,000.**

Que., Mount Royal—CHURCH—First United Church of Canada, 319 Monmouth Rd., plans by Fetherstonbaugh, Durnford, Bolton & Chadwick, 660 St. Catherine St., Montreal, Que., 30x120 ft., stone church, Graham Blvd. and Lombard Crescent, rein.-con. fdns., Approx. **$275,000.**

Sask., Gravelbourg—BUILDING— Bd. Managers Gravelbourg College, Gravelbourg, 160x220 ft. bldg., 32 ft. high to house bowling alleys, gymnasium, showers, billiard rooms, auditorium and 48x110 ft. swimming pool. **$110,000.**

INDUSTRIAL BUILDINGS

Fla., Jacksonville — BUILDINGS — National Container Corp., Tallyrand Ave., Zone 1, erecting several buildings and providing other addnl. facilities. **$550,000.**

●**Ill., North Chicago** — FACTORY — Abbott Laboratories, 1400 Sheridan Rd., plans by Naess & Murphy, 80 E. Jackson Blvd., Chicago, Zone 4, multi-story factory addn. **$1,500,-000.**

Ind., Muncie—PLANT—Warner Gear Div., Borg Warner Corp., Muncie, bays and addns. to plant for mfg. Ford automatic transmissions. **$150,000.**

Ind., South Bend—WAREHOUSE—International Mfg. Co., 921 S. Main St., plans by R. A. Worden & Assoc., 312 W. Colfax Ave., 1 story, 87x118 ft. structural steel warehouse, Kaley and Tucker Dr.

Ia., Davenport—PLANT—Swayer Biscuit Co., Davenport, branch warehouse and distr. plant. **$100,000.**

Md., Baltimore—WAREHOUSE, etc.—Clendenin Bros., J. C. Cochran, pres., 108 South St., 1 story, 15x18ix185 ft., approx. 482,850 cu. ft., masonry and steel and concrete factory for mfg. wire nails and wire products.

Minn., Minneapolis—HOUSE—Minneapolis & St. Louis Realty Co., Northwestern Bank Bldg., fruit house, on 165x330 site between 2 and 3 Avenues N. near 6 and 7 Sts., **$200,000.**

O., Akron—SALES, SERVICE, PARTS—Conan Motor Sales, Inc., 457 E. Market St., 2 story, 67x250 ft. auto sales and service and parts bldg., E. Market St. **$175,000.**

N. J., Trenton—BAKERY—Wm. Freihofer Baking Co., Union Blvd. and Quebec St., Allentown, Pa., plans by R. A. Bowers, 14 Hamilton Ave., Princeton, bakery Lawrence Twp. **$670,000.**

O., Cleveland — FREIGHT TERMINAL — Roadway Express Co., 703 Eagle Ave., plans by Arthur E. Rowe & Assoc., 1743 E. 25 St., 1 story, no bsmnt. concrete block freight terminal. **$200,000.**

O., Sheffield — PLANT — High Grade Food Corp., West River Rd., mfg. plant. **$100,000,** L. J. Gersami, 2811 Michigan Ave., Detroit, Mich., plant engr.

Pa., Chester—WAREHOUSE, etc.—Sears Roebuck & Co., 4640 Roosevelt Blvd., Phila., plans by Michaelson & Fedeli, Fox Bldg., Phila., warehouse and department store addns., alterations. **$100,000.**

Pa., Phila.—SALES AND SERVICE—Gillespie Motors, Inc., 5320 Lancaster Ave., sales and service bldg. **$175,000.**

Pa., Phila.—BAKERY, etc.—Mrs. Smiths Pie Co., 963 N. 9 St., bakery and garage. **$250,000.** Earl P. Allabach, 16 S. Broad St., consult. engr.

S. D., Huron — WAREHOUSE — Farmers Union, Huron, warehouse with offices. **$100,000.**

Tex., Houston — SHOP — Lester Goodson Pontiac Co., 1117 San Jacinto St., 22,000 sq. ft. steel frame auto shop, service, sales, year round air-conditioning. **$200,000.** Irving & Hoyt, 5519 Memorial Dr., consult. engr. Walter P. Moore, 4607 Montrose Blvd., structural engr. R. A. Jenkins, 4316 Blossom St., mechanical engr. CD 8/8.

●**Wis., Milwaukee** — STOCKHOUSE — Miller Brewing Co., 4002 W. State St., Zone 8, plans by Oscar Janssen, engr. and archt., Chemical Bldg., St. Louis, Mo., 10 story, rein.-con. stockhouse. **$2,000,000,** incl. equip.

Ont., Ottawa — WAREHOUSE, etc. — The Canadian Tire Corp., 394 Bank St., E. Leroy, 90x120 ft. warehouse, showroom and office, Kent St. and Bank Ave., W. Approx. **$200,000.**

Que., Hull—PLANT—Primco, Ltd., 14 Reboul St., Hull, 66x182 ft. plant, Hull-Pointe Gatineau Hy. Approx. **$100,000.**

Que., Drummondville—FACTORY—Marine Optical Mfg. Co., 25 Bates Rd., Beaton, Mass., 1 story, concrete brick plastic optical frame factory. Approx. **$100,000.**

UNCLASSIFIED

Delaware—RURAL DISTRIBUTION LINES—Delaware Electric Co-operative, Inc., Greenwood, 75 mi. rural distr. lines and sys. imprvs., Sussex Co. **$310,000.**

Del., Newark — STADIUM — University of Delaware, Newark, stadium. **$500,000.**

Ill., Alton—LOADING DOCK—Mississippi Elevator Co., Alton, grain-loading dock, incl. 375 ft. river wall, 2 towers to support steel tubes from top of grain elevators to river dock in Mississippi River half a mile above Lock and Dam 26. Approx. **$100,000.**

Ia., Des Moines—PARKING BLDGS.—City, plans by Wetherell & Harrison, Shops Bldg., 5 story ramp parking bldg., 9 and Grand Ave.; and 5 story ramp parking bldg., Approx. **$250,000** each. CD 7/31/47.

Ia., Fort Madison—CELL and CLUSTER—Sinclair Refining Co., 630 Fifth Ave., New York, N. Y., 24 ft. diam. steel sheet pile cell and 4-pile cluster on line 2,100 ft. from shore; cell to be connected to shore by four 6 in. pipelines buried at least 3 ft. below river bed.

Kan., Kansas City—DRIVE-IN THEATRE—Dr. Paul W. Gatzoulis, Mission, 1000 car Motorscope picture drive-in theatre, Merriam Blvd. in Rosedale Dist. south of here. **$100,000.**

Md., Baltimore — COMFORT STATIONS — City, City Hall, 4 comfort stations, Fayette and Liberty Sts., Greenmount and 23 Sts., Highland and Eastern Aves., near Hanover St. Market. **$140,000.** R. E. L. Williams, 410 Municipal Bldg., bldg. consatr. engr.

Massachusetts—SWIMMING POOLS, etc.—Commonwealth of Mass., Metropolitan Dist., Comm., Parks div., 20 Somerset St., Boston, plans by John M. Gray Co., 175 High St., Boston, swimming pool and lockers, Monantum Dist., Brighton—Allston, **$300,000;** swimming pool Magazine Beach, Cambridge, **$300,-000;** swimming pool, Waltham, Approx. **$100,-000.** Abbott Assoc., 18 Tremont St., Boston, engrs.

Mass., Boston—SWIMMING POOL—Commonwealth of Mass., Metropolitan Dist. Comm., Parks Div., 20 Somerset St., swimming pool Starrow Memorial Embankment. **$300,000.** Fay, Spofford, Thorndike, 11 Beacon St., engrs. CD 9/16.

●**Mass., Boston**—SUBWAY TUNNELS—Metropolitan Transit Auth., 31 St. James Ave., removing elevated structure from Giles St. Forest Hills and construct Subway Tunnel over same route; removing elevated structure from Haymarket Sq. to Sullivan Sq. and construct subway tunnel along same route, Approx. **$10,000,000** each.

Nebraska—RURAL DISTRIBUTION LINES—Consumers Public Power Dist., Columbus, rural distr. lines, Lancaster, Gage, Pawnee and Richardson Counties, **$100,000.** R. L. Schacht, c/o owner, ch. engr.

Nebraska—RURAL DISTRIBUTION LINES—Loup Valleys Rural Electric Membership Assn., Ord., rural distr. Lines, Valley Co. **$365,-000.** Raymond H. Reed & Co., Columbus, consult. engr.

New Mexico — RURAL DISTRIBUTION LINES—Central Valley Electric Co-operative, Inc., Estancia, N. M., 1,100 mi. rural distr. lines, 5,000 kva substation, Eddy Co. **$325,000.** H. N. Roberts & Assoc., 1310 Avenue Q, Lubbock, Tex., engrs. and archts. CD 10/4.

●**O., Cleveland**—RAPID TRANSIT SYSTEM—City, c/o Cleveland Transit Sys., 1404 E. 9 St., plans high speed rapid transit service to numerous points of city, **$27,200,000.** Mr. Rew, c/o owner, 1022 Carnegie Ave., ch. engr. CD 9/21/44.

Oklahoma—RURAL DISTRIBUTION LINES—Tri-County Electric Co-operative, Hooker, 225 mi. rural dist lines, Texas Co. **$250,000,** C. B. Guernsey & Co., 1414 N. Robinson St., Oklahoma City, consult. engrs. CD 10/17.

●**Texas**—POWER DAMS—Brazos River Conservation & Reclamation Dist., Mineral Wells, 3 electrical power dams, 1 east of Mineral Wells, at Turkey Creek, **$8,000,000;** 1 at Inspiration Point, south of Mineral Wells, **$7,-500,000,** both Palo Pinto Co., and other near Granbury, Hood Co. **$9,500,000.** CD 10/28/48, under Earthwork, Waterways.

Tex., Angelton—GAS SYSTEM—City, defeated Aug. 22, natural gas sys. **$200,-000.** Garrett Eng. Co., 5008 Almeda St., Houston, consult. engr. (**Correction**—status). CD 10/28.

Tex., Beaumont — PORT IMPRVS. — Port Comm., James H. Hartzog, Port Dir., Beaumont, rehabilitate and expand docks, sheds, warehousing, etc. **$500,000.** George Sachumburg, c/o owner, port engr.

†**Wash., Quilcene** — FISH HATCHERY — U. S. Fish & Wildlife Service, C St. between 18 and 19 Sts., N.W., Washington, D. C., rehabilitation fish hatchery. **$270,000.**

●**Wyoming**—RURAL DISTRIBUTION LINES—Tri-County Electric Assoc., Inc., Sundance, 710 mi. rural distr. lines and sys., imprvs., Crook Co. **$3,330,000.** H. S. Nixon Eng. Co., W. O. W. Bldg., Omaha, Neb., consult. engr.

Newfoundland, Bay d'Espoir—WHARF—Province of Newfoundland, St. Johns, wharf, **$100,000.** Ministry P. Wks., St. Johns, engr.

Ont., Hamilton—SWIMMING POOL—Municipality, plans by W. R. Souter & Assoc., 36 James St., swimming pool, **$210,000.** W. L. McFaul, city engr.

Ont., Toronto—PARK BUILDING—City, H. E. McCallum, chn. Bd. Control, Moss Park recreation bldg., incl. swimming pool, gymnasium, etc. Approx. **$100,000.** CD 1/16/45.

Que., Sherbrooke—DAM, etc.—City, renovation dam and powerhouse, Brompton Falls. Approx. **$300,000.** J. A. Cote, City Hall, city engr.

Que., Thurso—ARENA—Singer Mfg. Co., Ltd., Thurso, arena, incl. artificial ice plant, **$100,000.**

●**Que., Three Rivers**—ARENA—City, J. A. Mongrand, mayor, and Exposition Comm., 8,500 seating arena. Approx. **$400,000.**

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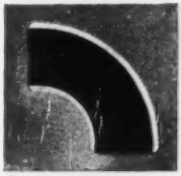

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CONSTRUCTION REPORTS—Second Section

WATER SUPPLY

BIDS ASKED

November 21

Md., Towson—Comrs. Baltimore Co. Court House, watermains, sewers, drains near here, Contr. 197 W. D. & S. Plans deposit $5. Wm. F. Neale, Court House, ch. engr.

N. Y., New York—Comr. Water Supply, Gas & Electricity, Municipal Bldg., Zone 7, watermains, appurtenances, Hillside and Kingsbury Aves., 263 St. and Union Turnpike, Queens Boro. Plans deposit $1.

November 22

N. Y., Bear Mountain—Palisades Interstate Park Comn., Bear Mountain, reservoir and pump house. CD 8/2/45.

November 26

Kan., Fort Scott—City, WW imprvs. $35,000, Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. CD 8/19.

November 28

Ga., Atlanta—City, c/o L. A. Walker, purch. agt., City Hall, electric sys. addns., imprvs. at Hemphill Ave. Water Pumping Station and water treatment plant. Plans deposit $25.

LOW BIDDERS

Md., Hyattsville — Washington Suburban Sanitary Comn., Hamilton St., Nov. 7, Contr. 691-W, water pump. station, incl. bldg., pumps, appurtenant piping, electrical sub-station and controls, roadway and site imprv., Willis School Filtration Plant, near Laurel, from Negreti Constr. Co., 6040 River Rd., Wash., D. C., **$334,900.** CD 10/27.

Mass., Boston—Commonwealth of Mass., Metropolitan Dist. Comn., 20 Somerset St., cancelled bids to have been opened Oct. 27, Contr. 183, constr. connections top of Shaft 7H, City Tunnel, Boston and Brookline. CD 10/18.

Tex., Fort Worth—City, W. O. Jones, mgr., Fort Worth, Oct. 27, 36 in. c.i. watermains from Holly Water Plant to Bluff St., from Quisle Constr. Co. & E. J. Tidwell, Sinclair Bldg., **$86,584.** Est. $81,000. CD 10/11.

Tex., Longview—City, City Hall, Oct. 27, Proj. 3, water filtration plant, 2 mi. from here from Thomas Bryan Assoc., M & M Bldg., Houston, **$416,935** est. $750,000, installing raw water pump, plant at Lake Cherokee, 9 mi. from here, from Phillix Constr. Co., Longview, **$54,250,** est. $375,000. CD 10/18.

Tex., Richardson—City, City Hall, Oct. 25, WW and sewers, from P. C. Sorenson, Southland Life Bldg., Dallas, **$52,484.** Est. $30,000. CD 10/17.

Wis., Milwaukee—City, Oct. 27, laying watermains in W. Lincoln Ave., from R-W Constr. Co., 4831 W. State St., Zone 8, **$33,306.**

CONTRACTS AWARDED

Mass., Boston — Commonwealth of Mass., Metropolitan Dist. Comn., 20 Somerset St., Contr. 187, reservoir Blue Hills Reservoir, Quincy, to Gil Wyner Co., Inc., 12 Newland St., Malden, **$746,097.** Bids 10/27, awarded 11/4. CD 11/2.

Minn., Thief River Falls—City, P. D. Pedersen clk., external water piping, incl. 6516 ft. c.i. male and river crossing, to Casper & Lyons, Grand Rapids, Minn., **$33,508.** Bids 10/4. CD 9/21.

N. J., Florence—Florence Twp., Florence, watermain extens., to Hughes Constr. Co., 52 Frazier St., Trenton, **$49,055.**

N. D., Dunseith—City, A/W sys., to W. H. Noel Co., Jamestown, **$81,638.** Bids 10/10. CD 9/29.

Tex., Bellaire—E. A. Carlson Co., 6900 Old Main St., Rd. Houston, c.i. waterlines, facilities to Mischer-Harris Constr. Co., 5141 Leeland St., Houston. Approx. **$33,000.** Howard, Johnson & Kelley, Scanlan Bldg., Houston, engrs.

Tex., Donna—City, City Hall, c.i. waterlines, force account, **$32,000.** Sigler, Clark & Winston, Box 428, Weslaco, engrs.

Tex., Wichita Falls—City, water filter bldg., sewer lines, force account. Approx. **$50,000.** John Ruhmann, city engr. CD 11/18/48.

Va., Clintwood—Water Comn., Clintwood, water filter plant, Associated Contractors, Marion, **$57,605,** pipelines, pump. stations, tank fdns., to A. J. Conner, Route 2, Box 54, Roanoke, **$94,064.** Bids 9/20. CD 8/29.

Que., Disraeli—Municipality, laying water pipes and constr. 250,000 gal. concrete reservoir, to Gerard Couillard, Coaticook, **$55,000;** boring artesian wells and installing pumps on these wells, to Antonio Dube, Granby, **$35,000.**

SEWERS, WASTE DISPOSAL

BIDS ASKED

November 21

Conn., Hartford—State, G. Albert Hill, hy. comr., State Office Bldg., 2,471 lin. ft. storm sewer in Governor and Thomas Sts., East Hartford, Town Aid Proj. Plans deposit $1.65.

November 25

Ga., Acworth—City, sanitary sewer imprvs., incl. 13,632 lin. ft. lines, 48 manholes, sewage pumping station, treatment plant. Plans deposit $15. Merritt & Welker, 206 Roswell St., Marietta, engrs.

November 29

●**Tex., San Antonio**—City, City Hall, Military Plaza, Contr. 1, sewage disposal plant addn. $850,000; Contr. No. 2, sewage disposal plant addn. and outside pipe work, $475,000. H. R. F. Helland, Frost Bank Bldg., engr. W. W. Toxey, city engr. CD 12/15/47.

LOW BIDDERS

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, Oct. 25, 5.34 mi. 8- to 18-in. vitr. clay sanitary sewers in Ivar Ave., Rosebead, from Max Slipich, 1428 S. Woods Ave., **$119,308.** Est. $131,960. CD 10/7.

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, rejected bids Oct. 18, 3.8 mi. 8 in. vitr. clay sanitary sewers in Ellis Lane, L. B. **$106,407.** Est. $119,000. CD 10/25, under LB.

Calif., Sacramento—Sacramento Co., Courthouse, rejected bids Oct. 24, sewers in Bellview Village District. Approx. **$50,000.** CD 10/12.

Calif., Tiburon—Sanitary Dist. 5, Tiburon, Oct. 24, sewers, from Underground Constr. Co., 75 Ave. and San Leandro Blvd., Oakland, **$73,541.** CD 10/11.

Ind., West Lafayette—Bd. P. Wks., City Hall, Oct. 31, 3 division sewage sys. exten., from A. Arcari, 15100 Goddard Ave., Allen Park, Mich., **$427,679.** CD 10/10.

Md., Hyattsville—Washington Suburban Sanitary Comn., Hamilton St., Nov. 2, 12,000 ft. 10- to 24-in. outfall sewer, Hillcrest Heights, Contr. 659-S, from Nickles Bros., 4707 Baltimore Ave., **$109,503.** CD 10/31.

Minn., Onamia—Village, W. A. Lipetzky, clk., Oct. 26, sewage collection sys., from Griffith Eng. Co., Mora, **$114,224;** sewage treatment plant, from Phelps Drake Co., 1415 8 St. S.E., Minneapolis, **$98,822.** CD 10/12.

R. I., Providence—State of Rhode Island and Providence Plantation, Blackstone Valley Sewer Dist. Comn., 238 State Office Bldg., Nov. 1 intercepting sewer, Sect. B, from Marinucci Bros. & Co., Inc., 51 Ceylon St., Dorchester, Mass., **$916,134.** CD 10/5.

CONTRACTS AWARDED

Conn., Hartford—Hartford Metropolitan Dist., Bd. Contract & Supply, 650 Main St., disposal plant, grading, clearing, etc., Pitkin St., East Hartford, Contr. 49-5, to New Britain Trucking Co., 1146 East Street, New Britain, **$92,454.** CD 10/20, under LB.

Kan., Pittsburg—At office Agnes M. Young, city clk., sanitary sewer mains, No. 4 and 6, to Griffin Constr. Co., Merriam, **$83,264.** CD 10/3.

Minn., St. Louis Park—Village, J. Justad, clk., storm sewer, Dist. 17, to DeGraff Wolff, 2360 University Ave., St. Paul, **$53,184.** Bids 10/17.

Okla., Oklahoma City — City, City Hall, Contr. 4, sanitary sub-main, to Earl W. Baker & Co., Bethany, **$301,950.** Est. $310,000. Awarded Jul. 6. Benham Eng. Co., American Natl. Bank, engr. CD 3/7/46.

Okla., Tulsa—City, City Hall, Coal Creek sewage disposal plant, to Roberts & Scisson, 1429 S. Braden St., **$211,108.** Est. $238,000. Bids 10/28, awarded 11/3. CD 10/17.

Tex., Bellaire—E. A. Carlson Co., 6900 Old Main St., Rd., Houston, sanitary and storm sewers, to Mischer-Harris Constr. Co., 5141 Leeland St., Houston. Approx **$65,000.** Howard, Johnson & Kelley, Scanlan Bldg., Houston, engrs.

B. C., Oak Bay—Oak Bay Dist., Oak Bay, drainage, day labor, **$60,000** voted.

Ont., Smith Falls—Town, F. R. Gilroy, clk., sewers on both sides of Rideau River and sewage disposal plant, Contr. A, 300 ft. culvert section, 1,624 ft. rock cut tunnel, 980 ft. 48 in. rein.-con. pipe, 112 ft. 30 in. outfall sewers and Contr. C, 1,385 ft. 18 in. sewer pipe, 1,073 ft. 24 in. c.i. force main river crossing, to Sullivan & Son, Ltd., 234 Elgin St., Arnprior, **$113,837***** Contr. B, 4,603 ft. 24 in. sewer pipe, force main river crossing, to H. J. McFarland Constr. Co., Ltd., 18 Elizabeth St., Picton, **$49,808***** Contr. D, sewage disposal plant and pump house, to Code Constr. Co., Ltd., 15 Moore St., Smith Falls, **$76,307.** Grand total $239,952. Total est. approx. $270,718. Bids 11/1. CD 10/14;

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

November 21	**December 1**
Connecticut	**California**
November 22	**December 2**
Iowa	**Pennsylvania**
Maryland	**December 9**
North Carolina	**New Brunswick**
November 28	**December 13**
Connecticut	**Texas**

LOW BIDDERS

Colorado—State Hy. Dpt., Denver, Oct. 25, 3 bridges, approaches 0.368 mi. State Hy. 1 from point near south of city of limits of Loveland, southerly to point approx. 1000 ft. south of Big Thompson River, Larimer Co., from Lawrence Constr. Co., 112 S. Elati St., Denver, **$58,715.** est. $69,526. CD 10/18.

Ind., Jay City—Comrs. Jay Co., Portland, Oct. 25, bridge over Wabash River, steel with concrete approaches, from R. L. Shutt Constr. Co., 215 EN York St., Indianapolis, **$70,300.**

Minn., Red Lake Falls—Red Lake Co., A. Prenevost, aud., Oct. 25, Bridge 6681 over Red Lake River, SP 63-502-02 (SAR 1), Minn. Proj. S 608 (5), from Helseth Eng. Co., Box 754, Minneapolis, **$94,040.** CD 10/5.

Montana—State Hy. Dpt., Helena, cancelled bids to have been opened Nov. 17, bridge over Trout Creek, Idaho line-Plains Rd., Sanders Co. CD 9/28.

●**N. Y., New York and Brooklyn**—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Nov. 7, reconstruct suspended spans of Brooklyn Bridge over East River, Alternate 1, entire proj. and Alternate 3, North Roadway, from K. K. Welding Co., Inc., 71 Pardge Ave., Brooklyn, Zone 22 **$3,317,537** Alt. **$3,322,537** and **$1,777,931** Alt. **$1,779,932** respectively*** Alternate 2, South Roadway, from Knauer & Christensen and Fischbach & Moore, Inc., 1 Madison Ave., New York, Zone 10, **$1,530,535** Alt. **$1,531,658.** CD 10/31.

CONTRACTS AWARDED

Georgia—State Hy. Dpt., Jim L. Gillis, Sr., dir., Atlanta, new bridge at Rocky Comfort Creek and widen, resurface 2 mi. approaches on Louisville-Sandersville Rd. beginning at Broad St. in Louisville and exten. toward Sandersville F 044-1 (1) Jefferson Co., to Mark Construction Co., Austell, **$114,957***** bridge and approach slabs on Suwanoochee Creek on Statesvill-Fargo Rd., State R 94 located at Clinch-Echols Co. line F-088 (1) (2), Clinch and Echols Counties, to H. M. Pafford, Jr., Waycross, **$90,146***** bridge and graded approaches 0.866 mi. at Rogue River on State Rt. 104 approx. 2 mi. east of State Rt. 115, S 1349 (1) Habersham Co., to A. G. Wimpy, Dahlonega, **$85,697.** Grand total $290,800. Bids 11/4, awarded 11/8. CD 10/26.

Iowa—State Hy. Comn., Ames, 36x103 ft. I-beam bridge with two 4.5 ft. sidewalks, 36x1,434 ft. continuous I-beam bridge two 4.5 ft. sidewalks (overhead crossing) 276 ft. Ramp Street Lighting sys. grading, paving and storm sewers etc. Iowa 14 on south Center St. in Marshalltown from Boone St. south 0.531 mi. to point south of Anson St., St. Proj. 23 (1), Marshall Co., to Jensen Constr. Co., 1901 Easton Blvd., Des Moines, **$771,753.** Bids 10/25. CD 11/1, under LB.

New York—Bureau Contracts & Accounts, Albany, railroad grade separation facilities at Broadway Crossing, Ulster Co., to Lilpsett, Inc., 80 Wall St., New York, Zone 5, **$897,926.** Bids 10/5. CD 10/7, under LB.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

November 21	**December 1**
Connecticut	**California**
November 22	**December 2**
Iowa	**Pennsylvania**
Maryland	**December 9**
Massachusetts	**New Brunswick**
North Carolina	**December 13**
	Texas
November 28	**December 14**
Connecticut	**Texas**
November 30	**Bids Asked**
California	**Texas**

November 21

N. Y., Brooklyn—President Brooklyn Boro, Boro Hall, Zone 2, grading, curbing, flagging, asph. on 6 in. concrete paving, E. 21, E. 28, E. 57, E. 92, and Hubbard Sts., Troy Ave., recurbing, reflagging, and asph. on 6 in. concrete paving Hendrickson St.

SOON LETS CONTRACT

Tex., Huston—Parker Bros., 5203 Navigation Blvd., soon lets contract street constr. and paving $50,000. E. S. & Robert M. Atkinson, 745 1st Natl. Bank Bldg., engrs.

LOW BIDDERS

California—State Div. Hys., Los Angeles, No. 3, road mix on untreated rock surf. and concr. 4 bridges 2 mi. between Main St. in Niland and 2 mi. N.W. of Niland, Imperial Co., from Roland T. Reynolds, 8751 S. Sunkist St., Anaheim, and Thomas Constr. Co., Box 1410, Santa Barbara, **$219,413;** imported base material and bit. rein.-con. slab bridge 5.8 mi. Lovekin Blvd. between Blythe and Palo Verde Mesa, Riverside Co., from Nathan A. Moore, 105 E. Garvey Blvd., San Gabriel, **$126,596.** CD 10/11.

California — State Div. Hys., Sacramento, Nov. 2, place imported base material road mix surf. 5.4 mi. between Southern Pacific R. R. crossing west of Keeler & Soda Plant, Inyo Co., from Rice Bros., Box 1488, Marysville, **$91,771***** bit. 2.1 mi. and seal coat between ½ mi. west of Yuba-Sierra Co. line and 2.6 mi. east of Yuba-Sierra Co. line, Yuba and Sierra Counties, from Louis Biasott, Box 587, Stockton, **$256,000***** plant mix on cement stabilized imported base material 2.5 mi.

(Continued on page 82)

This Million-Dollar Investment Pays Ten Per Cent

The city of Waverly, Iowa, has operated its own electric power plant since 1904. Starting with an investment of $13,400, the operation has been so successful that further investments, now totaling nearly a million dollars, have been made through the years. The record at Waverly offers many suggestions to men in charge of power.

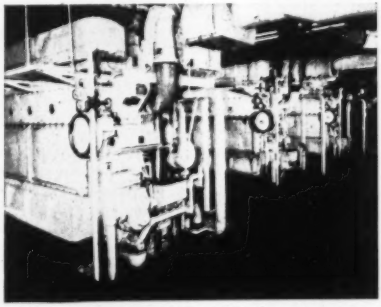
Up to 1937, the power generating equipment at the Waverly plant consisted of three hydro-electric units with a total capacity of less than 500 kw. In 1938, when the demand for more power increased, the city engineers ordered two Worthington EE-5 Diesel-electric generating units of 430 kw capacity each, and one Worthington D-5 Diesel-electric unit of 250 kw capacity. In 1942 a fourth Worthington unit of 720 kw capacity was added. The station's firm capacity at this time was 1310 kw with a maximum possible output of 2045 kw. Local power requirements averaged 1800 kw, therefore this additional capacity was needed as soon as possible.

More Power Needed and No Room for Expansion

The lack of floor space in the station caused considerable concern to the city's engineers, because the installation of an additional Diesel-electric generator would necessitate building an extension, and such an addition was found impossible since the plant was hemmed in by buildings on two sides and a street and river on the others.

So it was decided to supercharge three of the Diesels to meet mounting loads, and this proved to be economical and efficient. The engines had been installed to operate at a speed of 327 rpm, at conversion, the speed was increased to 360 rpm—the speed for which they were originally designed. This supercharging plus the change in speed increased the capacity by 1020 kw, and raised the engines' fuel economy by 1.0 kw per gallon of fuel oil consumed.

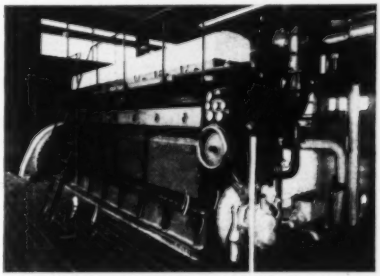
The cost of materials and equipment to convert the engines to supercharged units was about the same as that of a new 1020 kw generator and engine. But a saving estimated at $30,000 was realized by not having the expenditure for building alterations and switchgear units.



One Worthington supercharged SEH-8 and two supercharged SEH-5 Diesel engines at Municipal Power Plant, Waverly, Iowa

New Plant Built to Provide More Power

Still, the power requirement grew, and to insure a safe margin of spare capacity (and also to alleviate flood danger at the old plant), a new plant has recently been completed on high land in the outskirts of town. One Worthington SEH-8 supercharged Diesel-generator with a 1245 kw capacity was installed early this year, and now that this generator is on the line, the largest of the older sets will be moved in with it. Plans call for the balance of the old power plant to remain intact for stand-by and peak load service.



A Worthington SEH-8 Diesel engine shown in the new Municipal Power Plant at Waverly, Iowa

New Equipment Earns Money for Waverly

The supercharged engines have increased the average fuel economy by producing more kilowatt hours per gallon of fuel. Comparison of the fuel cost for the fiscal year ending 1944 (when all engines were non-supercharged) with that of 1949 (after supercharging), with running capacity factors almost identical, shows that for the year ending 1949, 11.1% more kw hours were produced per gallon of fuel oil than for 1944.

The customer is particularly pleased with the results of the Worthington SEH-8 engines. The average fuel production rates, as given in the city's 1948-49 annual report, are as follows:

Engine No. 4 (converted SEH-8) generated 3,088,000 kw hrs and produced 14.48 kw hrs per gallon at an engine running capacity factor of 59.2%.

Engine No. 5 (latest SEH-8) generated 105,600 kw hrs and produced 14.42 kw hrs per gallon at an engine running capacity factor of 45.6%.

The value of Waverly's power plants, generating equipment and distribution system is $942,666.00. On this investment of nearly a million dollars, profits during the fiscal year ending March 1949, after operating expenses, insurance and sales tax were deducted, amounted to $92,522.77—a dividend of 10%.

NEWS

FROM THE PUBLIC WORKS FRONT

AS REPORTED BY THE DEVELOPMENT ENGINEERS, FIELD SERVICE REPRESENTATIVES AND CUSTOMERS OF WORTHINGTON

WORTHINGTON PUMP AND MACHINERY CORPORATION, HARRISON, N. J.

Unique Water Circulating System Foils The Flood

A 70,000 square foot, two-pass surface condenser, with auxiliaries, now under construction for the third unit of The Ohio Public Service Company's R. E. Burger Steam-Electric Station uses the patented circulating water system pioneered jointly by Worthington and the customer's consulting engineer, Mr. George W. Saathoff.

Located on the Ohio River at Dilles Bottom, Ohio, this plant is on ground well above a flood stage which has reached as high as 57 feet above extreme low water level. The new condenser, when completed, will serve a 90,000 kw nominally rated turbine generator. Units #1 and #2, now in operation, are 60,000 kw nominally rated, and each is served by a 46,000 square foot Worthington condenser.

This unique water system permits all major equipment, except circulating pumps, to be located above flood stage with but slight increases in pumping power requirements compared with a low-level plant, and eliminates expensive excavation and substructure costs which would be necessary to locate the condensers in deep pits to maintain normal pumping heads and at the same time keep the turbine generator above flood stage. The long, large exhaust connection piece between turbine and condenser is also eliminated. All circulating and condensate pumps are vertical, with motors above high water, and all pumps are designed to operate completely submerged, if necessary.

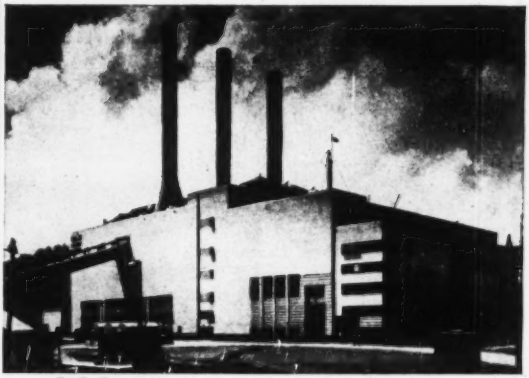
Two full capacity circulating pumps, illustrated in the diagram, are used in series. The primary pump is a Worthington motor-driven HIFLO, submerged below extreme low water. The secondary or booster pump is a Worthington single suction volute MIXFLO mounted directly upon, and driven by, an hydraulic turbine.

Advantage is taken of maximum syphon effect from the condenser discharge drop leg which enters a sealing or control well, from which all of the circulating water passes through the hydraulic turbine. In this way, 75-80% of the static head from sealing well to river level is recovered for useful work. This reduces the burden on the primary pump, with considerable saving in overall pumping horsepower.

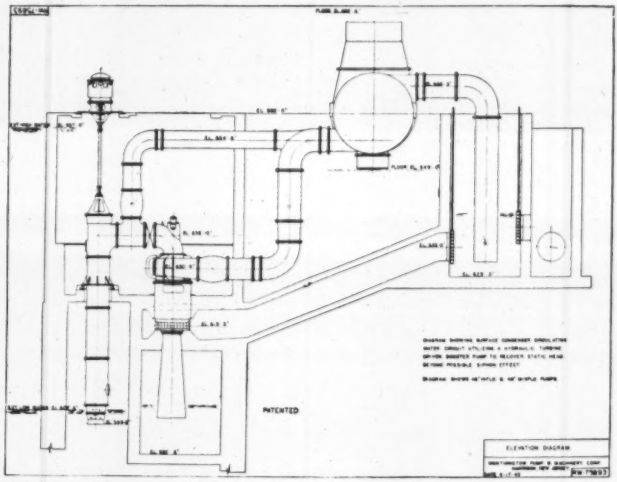
The HIFLO pump, with its high starting head characteristic, is able to deliver enough water to the condenser for starting purposes The by-pass, shown in the diagram, was omitted for Units #2 and #3, because the HIFLO can pump directly through the MIXFLO. When there is enough water in the control well, the hydraulic turbine is started and the HIFLO and MIXFLO automatically operate in series at full capacity.

The booster pump functions until the river rises to such level as to render the hydraulic turbine ineffective, from which point the motor-driven HIFLO operates alone, producing full capacity under reduced head. Unit #3 will include two half-capacity primary HIFLO pumps which will discharge through a single booster MIXFLO pump, thereby permitting operation of only one primary pump when low water temperatures prevail.

The system is ideal for installations where there is considerable fluctuation in water level and where it is desirable to locate the plant at considerable elevation above the source of circulating water supply for reasons of lower construction cost, accessibility or geographical location.

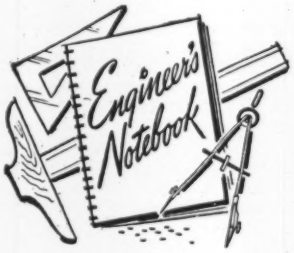


R. E. Burger Station of the Ohio Public Service Company, Dilles Bottom, Ohio



Worthington Pump and Machinery Corporation
Harrison, N. J.

NEWS



Worthington Treats Boilers To Clear Drinks

New Water Treating Plant Protects Evaporator... Reduces Blowdown

A new water treating plant was recently installed in a large midwest central station to protect the evaporator from scale and corrosion, and to reduce blowdown.

Filters Are Backwashed with Clear, Chemically Inert Water

Treatment is by the hot-process lime-soda system which has a normal rated capacity of 6250 gph of treated water deaerated to 0.005 cc per liter at 3 to 5 lbs operating pressure. A 1040 gallon deaerator water storage section and Worthington's exclusive filter wash water reclamation compartment have been made an integral part of the softener tank. This enables the filters to be backwashed with clear, chemically-inert water without disturbing the water under treatment.

Exclusive Hydraulic Agitating System Keeps an Even Mix

Chemical is fed by proportionate decantation from a single chemical supply tank equipped with Worthington's exclusive hydraulic agitating system. This system is designed to maintain a uniform mix within plus or minus 1% in concentrations up to 15% by weight of chemicals to water.

After automatic dilution with low-temperature condensate, the proportioned chemical is pumped to chemical spray lances in the softener by a Worthite centrifugal pump. This delivery pump and its spare have to operate against a 90 ft. total discharge head, because the softener tank was installed quite a distance above the chemical feeder and filters.

Treated and deaerated water is filtered through a battery of three pressure filters, having 5' 6" diameters and 5' 0" vertical straight sides. These filters are equipped with manifold-lateral underdrain systems and Worthington directional-flow cast-iron distribution nozzles and Carbworth beds.

Proportions Sludge Blowdown to Sludge Formation

The backwash line leading from wash water compartment to wash water pump suction is equipped with a venturi rate-of-flow indicator and direct reading mercury gauge. Its return line which runs from the filter to the wash-water reclamation compartment is equipped with a Worthington valve-type sight glass. Chemical proportionment is paced by an orifice-type indicating and recording meter through an adjustable time-interval relay and special decanting gear. An electrically motivated hydraulic all-iron sludge valve is likewise paced for the removal of the sludge from the softener in proportion to its formation.

Chemical Agitation and Feed Stop and Go Automatically

Operating character of the boiler plant is such that make-up requirements to the evaporator may be intermittent. Therefore, the treating plant is designed not only for continuous variable rate operation, but is also equipped with necessary interlocking devices so that chemical agitation and feed are automatically stopped with the discontinuance of treated water use and automatically returned to operation upon the resumption of treated water demand.

Raw Water is Tamed

Raw well water has a total hardness of 300 ppm and a carbonate alkalinity of 320 ppm. Previous experience with water of this character indicated that a temperature rise of more than 20° F would cause scale deposit. Therefore, for protection against scale deposit in the softener tubular vent condenser and possibly on the heater spray valves, the vapor flow from the top of the softener to the vent condenser is automatically controlled by an air-operated valve. This valve is piloted by a thermostatic mechanism, the element of which is mounted in the effluent water box of the vent condenser. In this manner, temperature of raw water passing through the tubes of the vent condenser is limited to 20°F, regardless of the load on the softener.

9.27

Worthington Pump and Machinery Corporation
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(Continued from page 78)

Avial Rd. between Ontario Hot Springs and Avila, San Luis Obispo Co., from Granite Constr. Co., Box 900, Watsonville, **$109,896.** CD 10/11.

†Colorado—Bureau of Public Roads, General Services Admin., 254 New Customhouse, Denver, Nov. 2, road work 2.991 mi. Jarre Canyon Proj. 50-F4, Douglas Co., from R. L. Hanes, Box 807, Denver, **$175,187.** CD 10/24.

Colorado—State Hy. Dpt., Denver, Oct. 28, grading, oil processing and structures 4.073 mi. State Hy. 14, between Ft. Collins and Walden Colo. Proj. S 0104 (2), Larimer Co., from Carl V. Hill, 1844 13 Ave., Greeley, **$182,821.** Est. $178,898. CD 10/19.

Colorado—State Hy. Dpt., Denver, Nov. 3, grading, base course surf. and structures 5.077 mi. State Hy. 172, between Durango and Ignacio, Plata Co., from Colorado Constructors, Inc., 725 W. 89 Ave., Denver, **$119,204,** Est. $142,823. CD 10/26.

†D. C., Wash.—National Capitol Parks, Dpt. Interior, Interior Bldg., 18 and C Sts., Oct. 26, c.conc., bit. and b.conc., bit. surf. Jefferson Dr. between 7 and 12 Sts. S.W., from Corson & Gruman Co., 33 and K Sts. N.W., **$56,282.** CD 10/16.

Ga., Atlanta—City, Oct. 31, wid'n. Glenn St. from Lee St. to Stewart Ave. and rebuilding underpass at Central of Georgia R.R. and Atlanta and West Point R.R., from Wainer Constr. Co., Valdosta, **$343,091.** CD 10/17.

Ill., Chicago—Cook Co., County Bldg., Oct. 18, surf., Vollmer Rd. between Harlem and Dixie Hy., from Alabama Asphalt & Limestone Co., 12 S. LaSalle St., Zone 3, **$50,288.** CD 10/10.

Kansas—State Hy. Dpt., Marysville, grading 8.792 mi. and Br. 24-97-17.2, Station 378 plus 13 two 10x10x44 ft. rein.-con. bridge Proj. 24-97 FI 263 (7), Part I, and c. conc. 0.726 mi. Proj. 24-97 FI 263 (7) Part II, Thomas Co., from M. W. Watson, National Bank of Topeka Bldg., Topeka, **$64,534** and **$90,639** respectively.

Kentucky—State Dpt. Hys., Frankfort, Nov. 4, traffic bound surf. 3.847 mi. Kuttawa-Princeton Rd., S-168 (1), S.P. 73-231, Lyon Co. and traffic bound limestone 11.336 mi. Cresswell-Enon-Fredonia Rd., RS 17-401, Todd-well Co., from L. V. Arnold, Eau Claire, Wis., **$77,025** and **$79,823** respectively***traffic bound 5.573 mi. Bardstown-Springfield Rd. Rd. F 222 (2), SP 99-125, Nelson Co., from W. C. Snider, Danville, **$254,835***high type wid'n. 0.487 mi. Fredonia-Eddyville Rd., SP 17-22 Street in Fredonia, Caldwell Co., from S. J. Boone, Owensboro, **$60,162***traffic bound surf. 7.825 mi. Tyes-Ferry-Woodbine (Meadow Creek) Rd., SP 118-660, Whitley Co., from B. R. Campbell & Son, Inc., Corbin, **$95,440***traffic bound surf. 4.554 mi. RS 42-648 the Ky. 59-Ky 384 Road, Graves Co., from J. D. Barker Constr. Co., Harrisburg, Ill., **$103,060***traffic bound surf. 4.649 mi. Kehoe-Lowder School Rd., RS 45-351, Greenup Co., from Kentucky Road Oiling Co. and J. Sneed Yager, 315 High St., Frankfort, **$119,682***traffic bound surf. 1.5 mi. Caney Creek Rd, RS 60-258 Knott Co., from R. R. Dawson Bridge Co., Bloomfield, **$62,174***traffic bound surf. 5.093 mi. Cooksey Creek Rd., RS 64-215, Lawrence Co., from Wingate & Co., Prestonsburg, **$71,538***traffic bound 5.432 mi. Beauty-Louisa (Turkey Creek-Rockcastle Creek) Rd., RS 80-121 Martin Co., from Eastern Constr. Co., Richmond, **$93,188***traffic bound limestone 1.619 mi. Graham Rd., RS 89-503, 2.367 mi. Yeargins Chapel-Vernal Grove Rd., RS 89-583, 2.202 mi. Clarks Mill Rd. RS 89-603, Muhlenberg Co., from O. L. Bapp, Owensboro, **$113,762***traffic bound surf. 8.34 mi. Sandefur Crossing Rd., RS 92-424, Onio Co from Ambrosius Ind., Inc., Strand Theatre Bldg., Louisville, **$178,836***traffic bound surf. 9.82 mi. Clio Sanders Creek Rd., RS 98-800 Whitley Co., from George H. Cheek Constr. Co., McClure Bldg., Frankfort, **$94,818.** CD 10/18.

●Louisiana—State Hy. Dpt., Baton Rouge, Nov. 2, grading, drainage structures I-beam span bridges, aggregate type base course, bit. surf. 7.493 mi. Hohwell-Springfield Rds. State Rtes. 276 and 270, State Proj. 255-02-05, Fed. Aid Secondary Proj. S-136 (1), East Baton Rouge Parish and grading, small drainage structures, creosoted timber trestle bridges, gravel, 1.37 mi. Bernice-Camp Creek School Hy., State Rte. 425, State Proj. 311-01-02, Union Parish, from T. L. James & Co., Inc., Ruston, **$309,223** and **$141,616** respectively. CD 1/04***c. conc. 1.939 mi. Charlotte-New Iberia and New Iberia-Loreauville Hys., State Rtes. 56, 444, and 446, S. P. 823-02-237-01-06, Iberia Parish, from Forcum-James Co., 1565 Choctaw Ave., Baton Rouge, **$136,860***new basin canal fill 1.944 mi. Pontchartrain Expressway, S. P. 283-07-04, F. A. P. U 409 (1) Orleans Parish, from Jahncke Service, Inc., 814 Howard Ave., New Orleans, **$1,375,851,** CD 9/12.

Maine—State Hy. Comn., Augusta, Nov. 2, b. conc. 7.68 mi. F. A. Proj. S 288 (3), Alfred, Lyman, Waterboro and Sanford, from Frank Rossi, R.F.D. 5A, Gardiner, **$423,125;** bit. grav. 1.757 mi. F. A. Proj. S 54 (2),

"127" Pittston and Randolph, from P. E. Susi & Co., Pittsfield **$104,109.** CD 10/24.

Maryland—State Rds. Comn., 108 E. Lexington St., Baltimore, Nov. 1, grading, drainage and surf. divided hy., U. S. Rte. 140, near Finksburg, Contr. CL 303-1-315 Carroll Co., from Nello L. Teer Co., Durham, N. C., crushed stone **$955,788,** quarried stone **$942,-503.** CD 10/26.

●Massachusetts—Commonwealth of Mass., Dpt. P. Wks., Boston, Nov. 1, S9-78 hy. and bridge, South Main St., Attleboro, from Westcott Constr. Co., 52 N. Washington St., North Attleboro, **$269,052***hy. relocation, Rte. 2, Ayer Rd. to Foster Rd., Harvard-Littletown, from Carlo Bianchi & Co., Inc., 24 Union St., Framingham, **$1,465,385***hy. Sandwich Rd., etc., Wareham, from B. A. Simeone, Inc., 72 Mystic Ave., Medford, **$311,050.** P. H. Kittfield, ch. engr. CD 10/20.

Mass., Boston—City, Dpt. P. Wks., City Hall, Annex, Oct. 28, sheet asph. pavement Beechcroft St., and Brighton, from Baker & Co., Inc., 3475 Washington St., Jamaica Plain, **$55,241.** CD 10/24.

†Montana—Bureau Pub. Roads, General Services Admin., P. O. Bldg., Missoula, Nov. 3, surf. 20.8 mi. forest hy. from Ashland to Broadus, Rosebud and Powder River Counties, from Lou Richardson, Miles City, **$129,744.** CD 10/24.

Montana—State Hy. Dpt., Helena, cancelled bids to have been opened Nov. 17, grading, surf., oiling 7 mi. Livingston-West Route, Park Co. CD 9/28.

●New York—Bureau Contracts & Accounts, Albany, cancelled bids to have been opened Nov. 22, grading, structures, misc. pavement, 3 rein.-con. arches, 4 rein.-con. 28 ft., 31 ft. and 74 ft. and 2 at 63 ft. rigid frames, one twin box 2 at 11.55 ft. 3.14 mi. Palisades-Interstate Parkway, Part 1 (Willow Grove-Tioratt), Contr. PIP49-2, **$2,551,000.** CD 11/2.

Tex., Canton—Van Zandt Co., Canton, Oct. 21, 6.4 mi. all weather road, No. 203, from Austin Contg. Co., 1000 Singleton Blvd., Dallas, **$36,193,** materials by owner, **$16,000,** total $52,193. CD 10/11.

Tex., Hereford—City, Oct. 22, street paving and imprvs., incl. 40,000 sq. ft., 40 blocks, 20 ft. wide, 6 in. caliche base, asph. topping, from Purtell & Jones, Lubbock Natl. Bank Bldg., Lubbock, **$40,340,** materials by owners, **$23,000,** total $63,340. Est. cost $60,000. CD 10/11.

West Virginia—State Hy. Dpt., Charleston, rejected bids Oct. 25, traffic bound base 5.672 mi. end of Proj. S 510 (1) to Braxton Co. Line Rd., Webster Co., L. B. **$231,657.** CD 10/14.

Wyoming—Bureau Public Roads, General Services Admin., 254 New Customhouse, Denver, Colo., grading and base surf. 9.8 mi. Moran-Yellowstone Approach Rd., Wyoming Forest Proj., Teton Co., from J. E. Jones, Cody, and A. E. Hurley, Worland, **$327,592.** cD 10/24.

CONTRACTS AWARDED

Califfronia—State Div. Hys., Sacramento, plant mix on cement treated surf. 3.3 mi. between Cape Horn and Merced Co. line, Santa Clara Co., to Eaton & Smith, 715 Ocean Ave., San Francisco, **$888,193.** Bids 10/19. CD 10/25, under LB.

●Georgia—State Hy. Dpt., Jim L. Gillis, Sr., dir., Atlanta, wid'n. shoulders and drainage extens. 13.593 mi. second stage constr. located on LaGrange-West Point Rd. beginning at city limits of Lafayette and ending in West Point, F 147 (5) Troup Co., to J. Frank Rushin Constr. Co., Inc., Buena Vista Rd., Columbus, **$196,059***grading, paving service road connections, 5 grade separation underpasses and one bridge 3,606 mi. Atlanta North South Expressway beginning at Fulton-Clayton Co. line and ending approx. 600 ft. north of Lakewood-Cleveland Ave. Fulton County, and Reynolds Dr. UI-536 (2-2) Fulton Co., to E. Jack Smith Constr., Hurt Bldg., Atlanta, **$1,088,735***grading, paving, service road connections and interchanges and 2 interchange bridges 1,939 mi. Atlanta North South Expressway beginning at Linden Ave. between Spring and Williams Sts. and exten. to Spring St. at point near Hunnnicutt Place with connection and grade separations etc. at Brookwood Station U-536 (2-3) Fulton Co., to Mac Dougald Constr. Co., Northside Drive N.W., Atlanta, **$1,497,964.**

grading, paving and new bridge 4.093 mi. at Big Creek on Irwin-Fitzgerald Rd., beginning at State Rt. 32 in Irwinville and exten. north S-0540 (1), Irwin Co., to T. D. Lamb Jr., Vidalia, **$75,928***grading, paving 6.416 mi. Tallapoosa-Cedartown Rd. State Rt. 100 beginning at State Rt. 8 in Tallapossa and exten. toward Cedertown, S-0092 (1), Haralson Co., to J. T. Smith, 215 Church St., Decatur, **$136,916***grading 1.446 mi. Union Point Lexington Rd. beginning at State Rt. 10 in Lexington and extend. toward Union Point S 0899 (1), Oglethorpe Co., to J. E. Jordan Constr. Co., Marietta, **$126,633.**

grading, paving and one bridge 3.34 mi. at Mulberry River on Lawrenceville-Jefferson Rd., State Rt. 124 ending at east city limits of Braselton, S-5010 (1) Barrow and Jackson Counties, to M. E. Wooding Co., Inc., 1544 Lakewood Ave. S. E. Atlanta, **$98,819***grading, paving and bridge at Potato Creek 6.546 mi. Meriwether Rd. or FAS Rt. 767 beginning at State Rt. 22 and extend. north, PR 1013 (2), Baldwin Co., to Jefferson Constr. Co., Wadley, **$82,939***grading, paving 7.607 mi. Cedar Rock-Thomson Rd. beginning at State Rt. 80 in Cedar Rock and ending in Thomson, S-1449 (1), Warren and McDuffie Counties, to W. T. Anderson, Inc., Thomson, **$184,562***grading 2.475 mi. Ft. Valley-Reynolds Rd., beginning approx. 0.8 mi. east of Flint River and exten. towards Reynolds, S-1512 (1), Crawford and Taylor Counties, to E. M. Beckham Constr. Co., Perry, **$110,117.** Grand total $3,598,672. Bids 11/4, awarded 11/8, CD 10/26.

Kan., Kansas City—City, street and alley paving, Proj. 2, to Union Constr. Co., 1401 Fairfax Trafficway, Kansas City, Kan., **$69,790.** Bids 10/18. J. O. Armstrong, city engr. CD 6/21/46.

Mississippi—State Hy. Comn., Walter Spiva, dir., Jackson, Oct. 25, grading, drainage, structures and bridge on 5.524 mi. Co. Hy. between Garden City and Roxie, Fed. Aid Sec. Proj. S-207, Franklin Co., to Boyd Constr. Co., Columbia **$85,846.** Est. $103,000. Bids 10/25 CD 10/18.

Neb., Geneva—City, paving, graveling streets, to Missouri Valley Constr. Co., 1029 Omaha Natl. Bank, Omaha, **$88,140.** Bids 10/24. CD 10/18.

Neb., Hemingford—City, paving, curbing, guttering, to Missouri Valley Constr. Co., Grand Island, **$87,170.** Bids 10/18. CD 10/12.

New Jersey—State Hy. Dpt., Trenton, constr. Route 29A Sect. 3, from Stockton to Raven Rock, Hunterdon Co., to Willis Constr. Co., Branchville, **$272,003.** Est. $360,000. Bids 11/1, awarded 11/2. CD 10/12.

New York—Bureau Contracts & Accounts, Albany, 5.5 mi. Lake Ontario State Parkway, from Walker-Lake Ontario Rd. eastward, Monroe Co., to Bero Eng. & Constr. Corp., McKinley Bldg., Buffalo, **$787,455.** Bids 10/5. CD 10/7, under LB.

N. Y., New York—Comr. Parks, at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., Zone 21, sheet asph. repaving Riverside Dr. from W. 85 to W. 72 Sts., etc., Manhattan Boro, Contr. No. M-71-249, to Frank Mascali & Sons, 4634 Third Ave., Zone 57, **$83,000.** Bids 10/11. CD 10/5.

New York—Bureau Contracts & Accounts, Albany, Vestal Avenue Bypass from Pennsylvania Ave. westward for 1.81 mi. to west city line, Broome Co., to White Oak Excavators, Inc., Plainville, Conn., **$974,132.** Bids 9/14 CD 9/19, under LB.

Okla., Oklahoma City—City, asph. paving Dist. 1102, to Metropolitan Paving Co., 1600 W. Reno St., **$97,440.** Est. $102,000. Awarded 10/25. H. E. Chase, city engr. CD 10/29/45.

●Pennsylvania—State Hy. Dpt., Harrisburg, rein-con. paving, bit. surf. crushed aggregate base; construct concrete T-beam and concrete deck I-beam bridge and bit. surf. for adjustment 23,016 ft. L. R. 132, Sect. A 3083, Sect. 1, 23021, Sect. 1, T. R. 352, from point in Parkside Boro to Black Horse, Delaware Co., to Berlanti Constr. Co., 15 Oakland Ave., Harmony, N. Y., **$849,425***bit. surf. pavement divided highway, rein.-con. paving; bit. surf. crushed aggregate base, construct rein.-con. bridge superstructure on existing abutments, incl. 9 rein.-con. structures 25,848 ft. L. R. 17, Sect. 7 T.R.U.S. 119, Hempfield Twp., Youngwood and South Greensburg Boros, Westmoreland Co., to Adam Eidemiller, Inc., Greensburg, **$1,686,337.** Bids 10/28. CD 11/1, under LB.

Pa., Philia.—Dpt. P. Wks., City Hall Annex paving Schedule 4, various locations to State Paving & Constr. Co., 1924 Arch St., **$50,685.** Dudley T. Corning, c/o owner, highways chief.

Tex., Bellaire—E. A. Carlson Co., 6900 Old Main St. Rd., Houston, addnl. rein.-con. paving, to Macher-Harris Constr., 6141 Leeland St., Houston, Approx. **$64,000.** Howard, Johnson & Kelley, Scanlan Bldg., Houston, engrs.

Tex., Greenville—Hunt Co., Greenville, farm-to-market road impr. and surf., northeast sect. of county. Owner builds. **$110,000.** CD 8/8.

Washington—State Hy. Dpt., Olympia, grading, draining, surf. 2,073 mi. State Hy. 2, 4-C and 10-B, Grand Coulee Vicinity, Grant Co., to Pfeiffer & Hafner, P. O. 6203 Sta. C, Spokane, **$90,688;** surf., stockpiling 5.47 mi. Primary State Hy. 5 Mossy Rock to Riffle vicinity, Lewis Co., to N. Fiorito Co., 844 W. 48 St., Seattle, **$143,221.** Bids 11/4, awarded 11/4. CD 10/26.

West Virginia—State Rd. Comn., Charleston, traffic bound 5.722 mi. Alpine-Ridge Rd. Sect. Rtes. 40 and 40-2, Fed. Aid Secondary Proj. S 573 (1), Jackson Co., and traffic bound 5.768 mi. Long Ridge Rd. (Sec. Rtes. 19/3 and 38/6) State Secondary Proj. 6678, Roane Co., to Anderson, Inc., 8 Story St., West, Charleston, **$106,370** and **$92,045** respectively***traffic bound 3.587 mi. Jenny-Gap Maben Rd. Sec. Rtes. 17/2, 34-1 and 5/4, State Secondary Proj. 7098 and 7097, Raleigh and Wyoming Counties, to Brown & Wright, Princeton, **$132,432***macad. base, b. conc. 5.529 mi. Hinton-Mercer Co. Line Rd. W. Va. Rte. 20, Fed. Aid Secondary Proj. S 600 (1), Summers Co., to Sutton Co., Ind., Radford, Va., **$195,316,** Grand total $526,143. Bids 10/25, awarded 10/25. CD 10/14.

Wyoming—State Hy. Dpt., J. R. Bromley, supt., Cheyenne, selected material surf., 7 rein.-con. culverts and misc. work, 7.646 mi. Newcastle-Lusk Rd., Proj. F 229 (5) Sect. II and State Proj. 2676 Combined, Weston Co., to J. E. England Constr. Co., 712 St. Cloud St., Rapid City, S. D., **$247,945,** est. $285,951 ***base course surf. and misc. work 4.939 mi. Gros Bentre River-Kelly Rd., Proj. S 74 (1), Teton Co., to Knisely-Moore Co., Douglas Co., **$104,231,** est. $121,289. Bids 11/4.

EARTHWORK, WATERWAYS

BIDS ASKED

November 22

†Colorado—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, concrete flume base and erecting steel and glass flume, about 10 mi. west of Denver, Spec. 229. L. N. McClellan, ch. engr.

†Colorado—U. S. Eng., 209 Railway Exchange Bldg., Denver, levees, water storage recording station and riprap embankment in outlet works escape channel at Cherry Creek Dam. CD 6/1/44.

†Vermont—U. S. Eng., Army Base, Boston 10, Mass., drilling Calyx Hole CH-1, at Ball Mountain Dam Site, West River, Windham Co., Serial No. CIVENG-19-016-50-23. CD 11/4.

†Virginia—U. S. Eng., First and Douglas Sts., N. W. Wash. 25, D. C., maintenance and new work dredging Rappahannock River, downstream of Fredericksburg, and new work dredging of Bransons Cover, Lower Machodoc River, Serial No. CIVENG 49-080-50-31.

November 28

Calif., Redwood City—Leslie Salt Co., 310 Sansome St., San Francisco, 370,000 cu. yd. dredging at Redwood Harbor, near here. Approx. $28,000. Plans deposit $15. B. C. Allin, 240 Sansome St., San Francisco, engr.

†West Virginia—U. S. Eng., Madison Ave., and 8 St. W., Huntington, Zone 18, signal lines for water level recorder, Guyandotte Bluestone Dam, Bluestone Reservoir Proj., New River, Serial No. CIVENG-46-022-50-40. Extended date. CD 10/18.

November 29

†Arizona-California-Nevada—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., one 120-inch butterfly valve, incl. one upstream flange for turbine-inlet pipe for Hoover Power Plant, Boulder Canyon Proj., Spec. 2319; adv. ENR 11/10. CD 9/12/44.

†California—Bureau Reclamation, Fresno, earthwork, pipelines and structures, Laterals 118.0 and 122.5 and sublaterals Unit 1, southern San Joaquin Municipal Utility Dist., Friant-Kern Canal Distribution System, Central Valley Proj., in vicinity of Delano, Calif Spec. 2821. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

†Florida—U. S. Eng., P. O. Box 4970, Jacksonville, dredging channel relocation, Naples to Big Marco Pass, and emergency dredging shoal at entrance to Matanzas Pass, off westerly end of Estero Island, Serial No. CIVENG-08-123-50-21.

†Idaho—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., levee and bank protection on Snake River 6 mi. north of Rigby, Jefferson Co., CIVENG 45-164-50-55. CD 8/16/45.

†Illinois—U. S. Eng., P. O. Box 97, Memphis, Zone 1, Tenn., Cairo Floodwall Improv., on Ohio River Front, Cairo, Alexander Co. and extends from 14 to 8 Sts. Inv. Serial No. CIVENG-40-041-50-57. CD 10/27.

†Iowa—U. S. Eng., 1709 Jackson Ave., Omaha, Neb., pump station and sewer, Unit V, Sect. 5, Flood Control adjacent to Missouri River, Carter Lake, Inv. 83. CD 10/19.

†Montana—Bureau Reclamation, Dpt. Interior, Columbia Falls, clearing part of Hungry Horse Reservoir site, on Forest Service's Spotted Bear Rd., 25 to 35 mi. southeast of Columbia Falls, Hungry Horse Proj., Spec. R1-HH11.

†Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, dredging Gulf Intracoastal Waterway at Bolivar Entrance Channel and North Bear Island to Greas Lake, Inv. No. CIVENG-41-247-50-93. $204,000. CD 11/22/43.

†Washington — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Odair, misc. structural steel and aluminum for Grand Coulee Pumping Plant, Columbia Basin Proj., Spec. 282-s. L. N. McClellan., ch. engr.

LOW BIDDERS

†Arkansas—U. S. Eng., 300 Broadway, Little Rock, Nov. 3, constr. work on Lot IV of Conway County Levee Dists. 3 and 7, Morrilton, Conway Co., CIVENG 03-050-50-30, from S. J. Cohen, Blytheville, **$113,030.** Est. $132,202. CD 10/19.

●†California—U. S. Eng., 1209 Eighth St., Sacramento, Nov. 1, construction Pine Flat Dam near Piedra, approx. 3½ mi. upstream or easterly from Piedra on Kings River, Fresno Co., Serial No. CIVENG-04-0167-50-5, Spec 1400, from Guy F. Atkinson Co., 10 W. Orange Ave., South San Francisco, Bressi & Bevanda Constructors, Inc., 417 S. Hill St., Los Angeles, Charles L. Harney, Inc., 1875 Berry St., San Francisco, P.A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., and A. Teichert & Son, Inc., 1846 37 St., Sacramento, **$24,339,777.** (**Correction**—contractors.) CD 11/4.

●Colorado—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Oct. 28, earthwork, canal lining, structures for enlargement of Fire Mountain Canal, Station 145 plus 00 to Station 340 plus 99 and Station 686 plus 00 to Station 740 plus 00, Paonia Proj. Spec. 2807, from Thornburg Constr. Co., Paonia, **$197,768.** Est. $200,984.

†Idaho—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., Oct. 25, levee and bank protection on Snake River, approx. 3 mi. northeast of Ririe, Jefferson Co., Serial No. CIVENG-45-164-50-37, from G. Geery, Missoula, Mont., **$81,529.** Est. $165,027. CD 10/18.

†Illinois—U. S. Eng., 826 U. S. Courthouse & Custom House, St. Louis 1, Mo., Nov. 1, 2 floodwalls and 3 closure structures, for 1 hy. and 2 railroad crossings in Wood River Drainage and Levee Dist., Proj. I-H, Madison Co., on east fork of Wood River in vicinity of East Alton, CIVENG-23-065-50-23, from J. E. Latta Constr. Co., 6609 Latta Pl., St. Louis 21, Mo., **$212,747.** CD 10/13.

Ill., Chicago—City, Dpt. P. Wks., Oscar E. Hewitt, dir., City Hall, dredging and temporary bridge, removal 130 St. and Calumet Rd., from Lake States Eng. Co., 53 W. Jackson St., Zone 4, **$28,975.**

†Ky., Louisville—U. S. Eng., 830 W. Broadway, Zone 1, Nov. 3, movable closure parts for Louisville Flood Protection, Serial CIVENG 15-029-50-22, from Stacey Bros. Gas Constr. Co., 5535 Vine St., **$151,012.** CD 10/27.

†Mass., Cuttyhunk—U. S. Eng., Army Base, Boston, Zone 18, Oct. 28, emergency maintenance dredging, Cuttyhunk Harbor, CIVENG 10-016-50-19, from Heling Dredging Corp., 166 N. Wellwood Ave., Lindenhurst, N. Y., **$34,410.** CD 10/20.

†Montana—Bureau Reclamation, Dpt. Interior, Canyon Ferry, rejected bids Oct. 12, furnishing, constr. 3 two-room and 3 one-room addns. to Wingfoot residences, Canyon Ferry Gov't. Camp, Canyon Ferry Basin Proj. Spec. R6-GF-11 (Region 6). L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr. CD 9/5/45.

†Tennessee—U. S. Eng., P. O. Box 97, Memphis, Zone 1, cancelled bids to have been opened Nov. 3, riprap paving at Presidents Island Revement, Tennessee (Mile 731 AHP), Serial No. CIVENG-40-041-50-52. CD 10/21.

CONTRACTS AWARDED

†Oregon—U. S. Eng., 628 Pittock Block, Portland, bank protection works along right bank of Middle Fork of Willamette River at A. C. Clearwater place, 5 mi. southeast of Springfield, Lane Co., CIVENG-35-026-50-122, to Groesbeck & Hickson, 939 Polk St., Eugene, **$28,253.** Est. $32,739. Bids 10/21. CD 10/5.

†Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, dredging Gulf Intracoastal Waterway Tributary Channel to Arkansas Pass, CIVENG-41-243-50-47 to McWilliams Dredging Co., 860 St. Charles Ave., New Orleans, La., **$226,043.** Bids 9/29. Awarded 10/12. CD 10/5, under LB.

Tex., Laredo—Central Power & Light Co., 120 N. Chaparral St., San Antonio, electrical power, earth, concrete and steel type reservoir and dam, to Killian & Keller, Sunset Rd., San Antonio. Approx. **$276,000.** George A. Mills, c/o owner, engr.

†Washington—Bureau Reclamation, Dpt. Interior, Coulee Dam, earthwork, Station 7 plus 20 to 466 plus 49.57 Potholes East Canal, Columbia Basin Proj., Spec. 2787, to Guy F. Atkinson Co., Cascade Bldg., Portland, Ore., **$937,602.** Est. $1,145,720. Bids 10/11, awarded 10/31. CD 10/18, under LB.

†Washington—U. S. Eng., Pittock Block, Portland 5, Ore., levee imprvt. in Wahkiakum Diking imprvt. Dist. 4, along south side of district, 1 mi. southeast of Skamokawa, Wahkiakum Co., CIVENG-35-026-50-126, to Diesel Towing Co., 39 S. E. Salmon St., Portland, Ore., **$42,175.** Est. $59,500. Bids 11/3. CD 10/12.

AIRPORTS AND AIRBASES

BIDS ASKED

November 23

†Va., Norfolk—CARBURETOR SHOP—Pub. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Zone 11, extend carburetor shop at Naval Air Station, Spec. 23136. Plans deposit $10.

November 25

N. Y., Idlewild—UTILITY SERVICES FOR PUMPING STATION—At office Chief Engineer Port of New York Auth., 111 Eighth, New York, Zone 11, utility services, paving, etc., for fire pumping station at New York International Airport, Contr. NYA-97. Plans deposit $25. CD 8/27/44.

November 29

†Ala., Mobile—SPRINKLER SYSTEM—U. S. Eng., P. O. Box 1169, Mobile, Zone 7, automatic sprinkler sys. facilities at Brookley Air Force Base, Serial No. Eng. 01-076 50-14. Extended date. CD 9/21.

CONTRACTS AWARDED

†Ill., Belleville—FLIGHT HAZARD REMOVAL—U. S. Eng., 520 Merchandise Mart, Chicago, Zone 54, removal flight hazards, etc., Scott Air Force Base, Serial No. Eng. 11-032-50-5, to Blackwell Corp., 2000 St. Clair St., East St. Louis, **$112,784.** Bids 9/30, awarded 10/29. CD 9/2.

Pa., Phila.—AIRPORT—Dpt. P. Wks., City Hall Annex, metal cargo and operational bldgs., hangars alterations, to Perry J. Goldman Constr. Co., Lewis Tower Bldg., **$87,307.** Bids 10/20. CD 10/13.

S. D., Rapid City — ADMINISTRATION BLDG.—City, administration bldg. at municipal airport to Brezina Constr. Co., Rapid City, **$96,100.** Ewing & Forette, Rapid City, archts. Bids 10/24.

Tex., Dallas—RUNWAYS—City, City Hall, Main and Harwood Sts., runway extens. at Hensley Field, Contrs. 1 and 2, to Holland Page Constr. Co., Georgetown Rd., Austin, **$844,504.** Bids 9/13. CD 9/22, under LB.

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AMERICANS ABROAD

●**Egypt** — Government of Egypt, Cairo, awarded contract expansion of Suez Canal oil refinery, to Lummus Co., 420 Lexington Ave., New York 17, N. Y., U. S. A., **$2,000,000.**

PUBLIC BUILDINGS

BIDS ASKED

November 21

Conn., Middletown—SCHOOL—City, Charles A. Schaefer, chn. Bldg. Comn., brick, steel frame school, Westfield St., $250,000. Sebastian J. Passanesi, 164 Court St., archt. CD 10/26, under LB.

N. Y., New York—HOUSING STREET IMPRVS.—New York City Housing Auth., 63 Park Row, Zone 7, street and yard imprvs. for Lester W. Patterson Houses Proj. No. NYS-11 in area bounded by E. 139 St., 3 Ave., E. 145, E. 146 Sts., and Morris Ave., Bronx Boro. Plans deposit $25.

N. Y., Yaphank — FIREHOUSE — Yaphank Fire Dpt., Main St., fire house. William I. La Fon, Jr., 20 S. Main St., Southampton, archt.

Ont., Simcoe—SCHOOL—C. F. Misner, secy. High School Bd., 24 McCall St., 3 story Simcoe High School addn., including new heating bldg. Approx. $200,000. D. N. McIntosh, Pigott Bldg., Hamilton, archt. CD 9/20.

Que., Sorel — SCHOOL — T. Bardier, secy. School Comn., 12 classroom school and residence in Parish of St. Maaime. Approx. $290,000.

November 22

Ga., Adel—HOSPITAL—Cook Co., Adel, hospital. Plans deposit $25. Lloyd Greer, 803 Oak St., Valdosta, archt.

N. C., Raleigh—MECHANICAL ENGINEERING—At Office of J. G. Vann, c/o North Carolina State College, Raleigh, mechanical engineering bldg. Plans deposit $25. Northrup & O'Brien, Reynolds Office Bldg., Winston-Salem, archts. CD 9/11/44.

†**Pa., Pittsburgh**—HOSPITAL—U. S. Eng., 925 New Federal Bldg., Zone 19, buildings, passageways and utilities on site of Veterans Admin. Neuropsychiatric Hosp. CIVENG-56-028-50-18, for Veterans Admin., Vermont Ave. between H and I Sts. N. W. Wash. 25, D. C. Extended date. CD 9/27.

November 23

●**Ky., Louisville**—SCHOOL—Bd. Educ., Fifth and Hill Sts., 2 story, brick, concrete MacArthur School, 3 and Southland Blvd., $1,000,000. Plans deposit $25. E. T. Hutchings, Heyburn Bldg., archt.

Tenn., Morristown—SCHOOL—City, school. Plans deposit $50. Rutherford & Painter, Daylight Bldg., Knoxville, archts.

November 28

●**Calif., Bellflower**—HIGH SCHOOL—Exselsior Union High School Dist., 15711 Pioneer Blvd., high school, Woodruff Ave., $1,200,000. Kistner, Curtis, Wright, 816 W. 5 St., Los Angeles, archts. CD 2/25.

Ky., Bowling Green — HOSPITAL — Oval Motley, clk. Warren Co., general contract, elevators and hatchway entrances, plumbing, heating, ventilation and air-conditioning; electrical work and fixtures, etc., Bowling Green-Warren County Hospital addn. Plans deposit $50. Robert W. McMeekin, Tates Creek Rd., Lexington, archt. CD 8/17/48.

†**N. C., Camp Lejeune (Br. New Bern)**—MEDICAL SUPPLY SECTION BLDG.—Pub. Wks. Office, Bldg. 1005, Marine Barracks. Modification to Bldg. 907 for Medical Supply Sect. at Marine Barracks, Spec. 22988. Plans deposit $10.

†**N. C., Camp Lejeune (Br. New Bern)**—(BARRACKS)—Pub. Wks. Officer, Bldg. 1005, Marine Barracks, Camp Lejeune, repairing shower rooms and baths, Hospital Corps Barracks, Bldg. H-23, at U. S. Naval Hospital, Spec. 23250. Plans deposit $10.

O., Youngstown — SANITORIUM — Comrs. Mahoning Co., Courthouse, altering various units of Mahoning County Tuberculosis Sanitorium. Plans deposit $10. Randall Medicus, 31 W. Federal St., archt. CD 12/8/45.

Tex., Beaumont—SCHOOL—Beaumont Independent School Dist., Beaumont, Henry Wadsworth Longfellow School. $300,000. Stone & Pitts, 1872 Calder St., Beaumont, and M & M Bldg., Houston, archts. CD 10/12.

Va., Hampton—BUILDINGS—At office W. M. Whitehead, supt. Virginia State School, Hampton, academic and recreation bldg. at Virginia State School, for State of Virginia, Richmond. $300,000. Staley & Taylor, 403 E. Franklin St., Richmond, archts.

November 29

La., Baton Rouge—SCHOOL—Parish School Bd., Old City Hall, gymnasium-auditorium, cafeteria, classroom addns. to Woodlawn School, 7th Ward; Weinbourne Elementary School, 3rd Ward; Beauregard School, Aisa St. Plans deposit $25 each. A. Hays Town, Masonic Bldg., archts. CD 5/4/44.

●**N. Y., Long Island City** — HOUSING — New York City Housing Auth., 63 Park Row, New York, Zone 7, general contract, heating and ventilating, electrical and plumbing for Sect. II, incl. Comfort Station and Buildings numbered 18 to 31 inclusive of Ravenswood Houses (Proj. No. NYC-20) in area bounded by 34 Ave., 21 St., 36 Ave., and 12 St., Queens Boro. Plans deposit $75. $7,299,425. F. G. Frost Jr., 144 E. 30 St., New York, archt. CD 9/8/47.

LOW BIDDERS

Ala., Anniston—HIGH SCHOOL—City Bd. Educ., Anniston, Oct. 27, Junior High School, from Jones & Hardy, Montevallo, **$825,288.** CD 10/17.

Ariz., Globe—HOSPITAL—Gila Co., Globe, hospital, from Harry J. Hagen, Globe, **$461,656.**

Ariz., Phoenix—CAPITOL ANNEX—State of Arizona, State Capitol, 3 story 495,000 sq. ft. capitol annex bldg., incl. air-conditioning, from McGinty Constr. Co., Luhrs Bldg., **$449,939.**

Calif., Oakland—SCHOOL—Bd. Educ., 1025 2 Ave., Nov. 1, 2 story, rein.-con. 16 classroom Fruitvale School, from John Branagh Son, 10 Sheridan Ave., Piedmont. **$497,700.** CD 10/18.

Calif., Oroville—COURTHOUSE—Butte Co., Courthouse, Oct. 24, 2 story, rein.-con. courthouse addn., from Frank C. Brunelli, 264 Clementina St., San Francisco, **$256,350.**

Ga., Atlanta — SCHOOL — Fulton Co. Bd. Educ., Courthouse, Nov. 1, West Side School, from Henry A. Ivey, Inc., 569 Pium St. N. W., **$593,040.** CD 10/3.

●**Kan., Merriam**—SCHOOL—Shawnee Mission High School Distr., Merriam, Nov. 3, general contract, school addn., from Collins Constr. Co., 15 W. 10 St., Kansas City, Mo., **$1,507,347.** CD 10/27.

La., Port Allen — SCHOOLS—West Baton Rouge Parish School Bd., Courthouse Bldg., rejected bids Oct. 18, 3 two-room and one 3-room steel grammar schools. CD 10/5

La., Shreveport — YOUTH ACTIVITIES — Louisiana State Fair, W. P. Hirsch, secy., Fair Grounds, Shreveport, Nov. 2, parts of Youth Activities Bldg., State Fair Grounds, from Werner Co., Inc., Pipes Ave., Proposals **(A) $298,946 & (B) $745,792.** CD 10/11

Me., Northeast Harbor—HIGH SCHOOL—Bd. Trustees Town of Mt Desert, School Dist., Northeast Harbor, Oct. 28, high school, from Consolidated Constr., Inc., 937 Congress St., Portland, **$303,303.** Frank I. Cooper, Inc., 937 Congress St., Milton, archt.

●**Md., Upper Marlboro** — SCHOOL — Prince Georges Co., Bd. Educ., Nov. 8, Upper Marlboro Suitland Junior High School, Silver Hill Rd., Suitland, from Jos. F. Nebel, 2142 P St. N. W., Washington, D. C. **$1,307,000.** CD 10/17

Mass., Agawam—SCHOOL—Town, Supt. Schools, High School, cancelled bids to have been opened Sept. 13, 2 story brick Center School addn. Approx. **$250,000.** CD 8/29.

Mass., Salisbury—SCHOOL—Town, School Bldg. Comn., Town Hall, Oct. 21, school, Maple St., from E. W. & P. B. Currier, 7 Sanborn Terrace, Amesbury, **$249,862.** M. E. Whitmer, Hilside Dr., Portsmouth, N. H., archt.

Minn., Owatonna — SCHOOL — Bd. Educ., Owatonna, cancelled bids to have been opened Oct. 1, 3 story school. **$450,000.** CD 9/8.

Miss., Laurel — HOSPITAL — Jones Co., Laurel, Nov. 1, hospital, from Batson-Cook Co., West Point, Ga., **$858,940.** CD 9/27.

O., Toledo—REFRIGERATION — Dr. Pb. Wks., S. O. Linzell, dir. Columbus, Oct. 20, general contract, 2 story, bsmnt, receiving bldg. at Toledo State Hospital, from J. H. Berkebile & Sons, 998 Whittier St., **$314,000.** CD 9/26.

Okla., Woodward—HOSPITAL—City, cancelled bids to have been opened Nov. 17, hospital. **$300,000.** Project postponed indefinitely. CD 11/2.

●**Ore., Salem**—OFFICE—State Hy. Comn., State Office Bldg., Salem, State Hy. Dpt. Bldg., from Sound Constr. & Eng. Co., 1403 W. 45 St., Seattle, Wash. **$1,559,931.** CD 9/29.

Pa., North Huntingdon Twp. (near Irwin)—SCHOOL—North Huntingdon Municipal Auth., Irwin, 2 story, brick, steel irregular sized Junior-Senior High School, from Westmoreland Constr. Co., P. O. Box 32, Greensburg, **$538,675.** CD 9/22.

●**Tex., Highland Park**—SCHOOLS—Highland Park Independent School Dist., Highland Park, Oct. 31, Junior High School, from O'Rourke Constr. Co., 1001 Commerce St., Dallas, **$278,500***** high school, from J. L. O'Rourke & Sons, 707 Cleremont St., Dallas, **$258,000***** University Park Elementary School and Bradfield Elementary School, from Roland Constr. Co. & Roth Constr. Co., 2628 Ferris St., Dallas, **$276,000** each. CD 10/5.

Tex., Iraan and Sheffield—SCHOOLS—Sheffield Independent School Dist., Pecos Co., Sheffield, Nov. 1, general contract high school, elementary school, stadium, garage, shops, athletic courts, etc., from Dunlap Constr. Co., Kermit, **$487,600.** CD 10/18 under LB.

Tex., Prairie View College—DORMITORY—Agricultural & Mechanical College of Texas, College Station, Oct. 26, girls dormitory, from Vivrett, & Vivrett, Insurance Bldg., Dallas, **$302,893.** Est. $300,000. CD 10/3.

Va., Fredericksburg — State of Virginia, Richmond, Oct. 25, dining hall alterations addns. to Searcobeck Hall, at Mary Washington College of University of Virginia, from C. E. Nuckols, 1103 E. Main St., Richmond, **$333,175.** J. Binford Walford & O. Pendleton Wright, 103 E. Cary St., Richmond, archts. CD 10/11/44.

CONTRACTS AWARDED

Ariz., Phoenix—LIBERAL ARTS — State, University of Arizona, 4 story, steel, concrete liberal arts, 3 laboratories, specialty rooms, seating 2,341 students, to M. M. Sundt Constr. Co., Tucson, **$821,403.** CD 1/28.

Colo., Denver—SCHOOL—School Dist. No 1, City and Denver Co. 414 14 St., general contract 1 story, Stephen Knight School, to Platt Rogers, Inc., 1530 W. 13 St., Denver, **$534,548.** Bids 10/2, awarded 11/2. CD 11/1, under LB.

Conn., West Hartford—SCHOOL—Town, Dr. E. H. Thorne, supt. Schools, 1 story brick, steel school, to A. F. Peaslee Co., 15 Lewis St., Hartford, **$713,117.** Bids 10/21. CD **11/1,** under LB.

†D. C., Wash. — WHITE HOUSE — Pub. Bldgs. Admin., F St. between 18 and 19 Sts. N.W., renovating and modernization of White House, to John McShain, Inc., 1901 F St. N.W., **$100,000** cost-plus-fixed-fee contract. Est. cost $4,160,000. Bids 10/28, awarded 11/3. CD 10/31, under LB.

Ga., Waycross—SCHOOLS—Ware Co. Bd. Educ., Waycross, 2 elementary schools and addns. to Williams High Schools, to Paul Kessling, Waycross, **$263,000.** Kemp, Bunch & Jackson, Florida Theatre Bldg., Jacksonville, Fla., archts.

●**Md., Mt. Savage**—SCHOOL—Bd. Educ. Allegany Co., Washington St., Cumberland, 2 story, steel, brick, concrete school, to Geo. F. Hazlewood, Cumberland, **$1,255,680.** Bids 10/27. CD 10/6.

●**Mass., Boston**—HOUSING—City of Boston Housing Auth., 10 Post Office Sq., Cathedral Housing, South End, to M. S. Kelliher Co., 294 Washington St., **$4,978,995.** Bids 9/7, awarded 10/26. CD 9/15, under LB.

●**Mass., Cambridge**—HOUSING—City of Cambridge Housing Auth., Angelo Sciarappa, chn., 1416 Mass. Ave. 228 family housing units, Cambridge St. between Willow and Windsor Sts., to C. J. Maney Co., 24 Dane St., Boston, **$2,475,000.** Bids 11/3. CD 10/18

●**Mass., Quincy**—HOUSING—City of Quincy Housing Auth., City Hall, housing Proj. 200-1, Germantown Sailors Snug Harbor, to Jefferson Constr. Co., 75 First St., Cambridge, for Zone 1 **$589,311***** to Platt Constr. Co., 99 First St., Cambridge, for Zone 7 **$845,968***** to Franklin Constr. Co., Inc., 26 Mystic Ave., Medford, for Zone 3, **$539,253.** Grand total $1,974,532. Bids 10/26, awarded 11/3. CD 11/1, under LB.

Mass., Woburn—HOUSING—City of Woburn Housing Auth., Woburn, 60 unit family housing, Webster St., to Jefferson Constr. Co., 52 Washington St., Chelsea, **$563,198.** Bids 10/24. CD 11/1, under LB.

Minn., Grand Rapids—COURT HOUSE—Itasca Co., general contract, court house, to H. L. Stavn Co., Hibbing, **$505,000.** Bids 10/10. CD 10/27.

Minn., Moorhead—SCHOOL—Bd Educ., C. Stever, clk., general contract Northside Grade School, to Kileen & White Constr. Co., 1402 Poplar Ave., Superior, Wis., **$292,446.** Bids 10/25. CD 10/5.

Mont., Missoula—SCHOOL—Missoula School Dist., general contract, 3 schools, to Hitz Constr. Co., Billings, **$579,394.** Bids 10/28. CD 11/2.

O., Athens—POWER HOUSE—State Dpt. P. Welfare, State Office Bldg., Columbus, 1 story, brick power house at Athens State Hospital, to S. T. Kenyon Co., Inc., 627 Tenth St., Portsmouth. Approx. **$300,000.** Awarded 10/11. Wm. C. Kammerer & Assoc., 1900 Euclid St., Cleveland, engrs.

O., Caldwell — LIGHT PLANT—Village, light plant, to Fairbank Morse Co., 2810 Superior Ave., Cleveland. **$102,000.** Est. $100,000. Awarded 10/4 Paul W. Elwell, 5005 Euclid Ave., Cleveland, consult. engr.

●**Pa., Harrisburg** — HOSPITAL — Polyclinic Hospital, 3 St. and Polyclinic Ave., general contract, annex bldg., to Polyclinic Hospital to H. B. Alexander & Son, 315 Vaughn St., **$1,-155,319,** heating, ventilating and plumbing, to R. E. Wolfe, 1725 Market St., **$397,508.** Bids 11/2, awarded 11/3. CD 10/18.

S. D., Rapid City—CIVIL MECHANICAL—State Bd. Educ., Pierre, general contract brick, tile & concrete walls, roofing and floor joists, civil-mechanical bldg. at School of Mines, to M. A. Garland Constr. Co., 629½ Main St., **$336,200.** Bids 9/8. CD 8/24.

†**Tenn., Oak Ridge**—DWELLING ALTERATIONS—U. S. Atomic Energy Comn., Administration Bldg., Oak Ridge, rehabilitation 503 dwelling units, Hamilton Circle, Hillside Rd., Illinois Ave., Jarrett Place, Jefferson Ave., Via Outer Dr. and Robertsville Rd., to Midland Land & Development Co., Midland, Tex., **$683,319.** CD 11/4, under LB.

Tex., Dallas—HIGH SCHOOL—Dallas Bd. Educ., 3700 Ross St., Forest Ave. Junior High School, to T. C. Bateson Constr. Co., Irwin-Keasler Bldg., **$549,400.** Bids 11/1. CD 10/7.

Utah, Salt Lake City—ADMINISTRATION BLDG.—State Building Bd., Dr. Emile Waltzing, supt., State Capitol. Administration Bldg. C at new State Prison located at Point of the Mountain, to Christiansen Bros., 208 W. 13 South St., **$372,939.** Bids 10/3. Ashton, Evans & Brazier, 24 S. West Temple St., archts.

Va., Harrisonburg—SCHOOL—Rockingham Co., Harrisonburg, Consolidated High School between Harrisonburg and Elkton, to English Constr. Co., Altavista, **$622,740.** Dixon & Norman, 1103 E. Main St., Richmond, archts.

Wis., Stevens Point—HOSPITAL—Sisters of Sorrowful Mothers, 6718 Cedarburg Rd., Milwaukee, Zone 3, 4 story 100 addnl. bed, rein.-con., steel, brick St. Michaels Hospital addn., to Hutter Constr. Co., 134 Western Ave., Fond du Lac. E. Brielmaier & Sons Co., 735 N. Water St., Milwaukee, Zone 2, archt.

COMMERCIAL BUILDINGS

BIDS ASKED

November 23

Ont., Hamilton—RESEARCH—R. W. Frost, secy. Bd. Governors McMaster University, Hamilton College, 2 story, bsmnt., T-shaped 44x120 ft., rein.-con., nuclear research bldg., 35x38 ft. rear wing. Approx. $500,000. W. R. Souter, & Assoc., Pijott Bldg., archts.

November 25

Conn., New Haven—CHURCH—Church of the Redeemer, 575 Whitney Ave., 1 story, bsmnt., brick, stone church, Whitney Ave. and Cold Spring Rd. $250,000. Extended date, Douglas Orr, 111 Whitney Ave., archt. CD 11/1.

November 29

Tex., Beaumont—COUNTRY CLUB—Beaumont Country Club, Colliers Ferry Rd., modernizing country club, incl. athletic courts, golf links, asph. paving, main club bldg., etc. $250,000. Stone & Pitts, 1872 Calder St., archts. CD 4/28.

●**Tex., Houston** — TOLL — Southwestern Bell Telephone Co., 1010 Pine St., St. Louis, Mo., 7 story, bsmnt., 125x142 ft. brick, hollow tile, concrete block, cut stone, granite walls, steel toll bldg., concrete beam and pier fdn. $1,750,000. C. E. Overbeck, c/o owner, archt. Robert J. Cummins & Reginald F. Taylor, Bankers Mortgage Bldg., engrs.

Bids Asked

Tex., Dallas—THEATRE—Robb & Rowley, 314 Harwood St., 1,400 seating capacity theatre, Wynnewood Shopping Dist. $250,000. Pettigrew & Worley, 160 Avery St., engrs. and archts.

●**Tex., Houston**—SHOPPING CENTERS—L. F. Corrigan, Mercantile Bank Bldg., Dallas, shopping center, N. Shepherd St., $1,000,000; shopping center, east side, outside business distr. $900,000; community or shopping center, $350,000. Darrell P. Walling, 401 Maple St., archt. CD 1/27.

●**Tex., Pasadena**—SHOPPING CENTER—L. F. Corrigan, Mercantile Bank Bldg., Dallas, shopping center off Old Spanish Trail Rd. $1,250,000. D. P. Walling & Harry B. Grogan, 7616 Tipps St., Houston, archts. CD 1/27.

SOON LETS CONTRACT

Calif., Daly City—BOWLING ALLEYS—Dan Colan, 6940 Mission St., soon lets contract 1 and 2 story, concrete block alleys cocktail lounge and stores. $250,000. Robert Nordin, 1040 Mills Bldg., San Francisco, archt. H. L. Marchand, 593 Market St., San Francisco, engr.

O., Cleveland—CHURCH, etc.—St. Leo Catholic Church, 4865 Broadview St., soon lets contract 460 seat capacity brick, steel U shaped church and elementary school. $350,000. Miller & Voinovich, 1011 Swetland Bldg., archts. A. Paul Konter, Hippodrome Bldg., consult. engr. CD 6/30.

Tex., Dallas—DORMITORY—Methodist Hospital, 301 W. Colorado St., soon lets contract 3 story penthouse, bsmnt., masonry, steel nurses dormitary, concrete pier and beam fdn. $375,000. George L. Dahl, 2100 N. St. Paul St., archt. David C. Pfeiffer, 5609 Yale St., engr. CD 9/27/45.

Tex., Robstown—SANCTUARY, etc.—First Baptist Church Congregation, Robstown, soon lets contract 1 and 2 story masonry sanctuary, educational, young peoples entertainment bldgs. $250,000. Will N. Noonan, 720 Travis Bldg., San Antonio, archt.

Tex., Waco—EDUCATIONAL—Columbus Ave. Baptist Church Congregation, 1300 Columbus Ave., soon lets contract 3 story, bsmnt. educational bldg. $350,000. W. Cocke Jr. & Co., 1507 Franklin St., archts. Frank Droughat, 117 W. Pecan St., San Antonio, structural engr., H. B. Wells, Dallas, mechanical engr. CD 10/21.

Ont., Sudbury—OFFICE, etc.—K. W. Bash, engr., c/o Loblaw Groceterias Co., Ltd., Fleet and Bathurst Sts., Toronto, soon lets contract 1 story, bsmt., rein.-con. structural steel, concrete block, brick office and stores together with groceteria store, Elm Ave. and Flood Rd. Approx. $275,000.

Wash., Richland — THEATER — Midstate Amusement Corp., Walla Walla, soon lets contract 125x185 ft. rein.-con. theater. $250,000. H. Brandt Gessel & Assoc., Seil Bldg., Walla Walla, archts.

LOW BIDDERS

●**N. J., Fort Dix**—APARTMENTS, etc.—Dpt. Army, First Army, 90 Church St., New York, N. Y., is negotiating contracts 27 bldg. garden apartment, with J. A. Johnson, 268 41 St., Brooklyn, 32, N. Y. Est. **$2,700,000;** and 300 Lustron prefabricated houses with Northern New Jersey Better Living Homes Co., 260 Mt. Vernon Ave., Newark. Est. **$3,000,000.**

Ore., Bend—HOSPITAL—St. Charles Hospital, Bend, Nov. 1, general contract 3 story, rein.-con. hospital addn. from J. H. Wise & Son, Inc., 424 Broadway, Boise, Idaho. **$538,798.** CD 10/12.

Tenn., Cleveland—CHURCH—First Baptist Church, Cleveland, rejected bids Oct. 19, church. CD 10/8.

●**Tex., Baytown**—SHOPPING CENTER—Leo F. Corrigan, Mercantile Bank Bldg., Dallas, cancelled bids shopping center, 7 acre site. **$5,500,000.** CD 8/16.

●**Tex., El Paso**—HOSPITAL—Province Memorial Hospital, Dr. L. L. Evans, dist. supt., El Paso, Nov. 1, 6 story, bsmnt., steel, 272 bed Memorial hospital and nurses home, concrete pier and beam fdn., from Robert E. McKee, Box 562, **$2,227,000.** Est. $2,000,000. CD 9/7.

●**Tex., Houston**—HOSPITAL, etc.—Methodist Hospital, 3020 San Jacinto St., Oct. 28, 8 story, bsmnt. 300-bed rein.-con. steel, brick, stone, masonry general hospital, partial air-conditioning and laundry, from Thomas Hate & Sons, 1107 Girard St., **$3,236,000** est. $3,500,000 and **$86,000** est $75,000 respectively. CD 10/28.

CONTRACTS AWARDED

Ala., Birmingham—APARTMENT DEVELOPMENT—Highland Tower Apartments, c/o contractor, apartment development, to Foster & Creighton Co., American National Bank Bldg., Nashville, Tenn. Approx. **$500,000.**

Calif., Arcadia — DWELLINGS — Meeker Land Co., 3612 E. Live Oak Ave., 60 stucco dwellings, to Ray Smillie, 3612 E. Live Oak Ave. Approx. **$504,000.**

Calif., Concord — RESIDENCES — Meadow Development Co., Box 340, Lafayette, 61 residences, Mayette Ave. and William Way in Meadow Village 2. Owner builds. **$310,000.**

Calif., Downey—DWELLINGS—Ajax Constr. Co., 3221 Independence Ave., South Gate, 150 stucco dwellings. Owner builds. **$890,900.**

Calif., Lakewood—DWELLINGS—Cunningham & Brittain, Inc., 4100 Bellflower St., Long Beach, 111 stucco dwellings in Tract 13295. Owner builds. **$888,000.**

Calif., Los Angeles—DWELLINGS—Birmingham Development Co., 16910 Sherman Way, 104 frame, stucco dwellings, to Arnold Constr. Co., 7051 Hazeltine Ave. Approx. **$555,890.**

Calif., Los Angeles—DWELLINGS—Kleeseld & Son and Don Jaram, 490 S. San Vicente Blvd., 100 frame, stucco dwellings, Roscoe and Laurel Canyon Blvds. Owner builds. **$500,000.**

●**Calif., Los Angeles**—APARTMENT—Union Housing Plan Inc., 1500 Lincoln Blvd., 62 stucco apartments, Eckland and Dareen Places, Frederick and Lake Sts., Elkgrove Circle, Penmar Ave. Owner builds. **$5,500,000.**

●**Calif., Norwalk**—DWELLINGS — Sydmar Homes Inc., 6305 Orange Ave., Long Beach, 464 stucco dwellings. Owner builds. **$2,178,900.** Paul Duncan, 4823 Laurel Canyon Blvd., Los Angeles, archt.

Calif., Rivera — DWELLINGS — Rivera Homes, Inc., 35 N. Raymond Ave., Pasadena, 80 frame, stucco dwellings, E. Brookpark, Vista Del Rosa, E. Blandwood Rd., Smallwood, Rieres Ave., to Secrest Constr. Co., 1901 Whittier Blvd., Whittier, **$512,000.** M. J. Varner, 35 N. Raymond Ave., Pasadena, archt.

Calif., San Jose — RESIDENCES — Kaiser Community Homes, Box 340, Manchester Ave., Los Angeles, 41 residences in Boxwood Drive. Owner builds. **$274,000.**

Calif., San Lorenzo—RESIDENCES—Sunnybilt Homes Corp., 15299 Beatty St., 36 residences, Beatty St. and W Ave. 154. Owner builds. **$288,000.**

Del., Claymont—RESIDENTIAL DEVELOPMENT—Cantera Constr. Co., 1508 Penna Ave., Wilmington, residential development, Wilson Ave., etc., separate contracts. **$250,000.**

Fla., Jacksonville—APARTMENTS — Walter R. Crabtree Co., Barnett Bank Bldg., Zone 2, erecting six 2 story providing 52 family unit apartments, Main and Atlantic Blvd., also 35 St. from Main to Panama Rd. and building sidewalks and playgrounds. Owner builds. **$275,000.** C. F. Irish, Independence Life Bldg., Zone 3, and W. H. Marshall, 52 W. Bay St., Zone 2, archts.

Fla., Jacksonville — HOMES — Demetree Builders, Inc., 1619 Hendricks Ave., Zone 7, erecting 33 individual family homes in Glenlea Park Section. Owner builds. **$297,000.**

Fla., Jacksonville — APARTMENT — A. R. Means, 3535 Hendricks Ave., Zone 7, one 16 family unit apartment 1634-62 River Rd. and two 4 family unit apartments, River Rd. facing St. Johns River, to Means Constr. Co., 945 Phillips Hy., Zone 7, **$257,000.** Awarded 10/25. Marsh & Saxelby, Hildebrandt Bldg., archts.

Fla., Jacksonville — HOMES — Riverview Building & Supply Co., Lem Turner Rd., erecting 35 individual family homes in Lake Forest Suburb. Owner builds. **$280,000.**

Fla., Miami—HOMES—Moss & Son, Inc., 3500 Coral Way, 174 homes in Princess Park Area. Owner builds. Approx. **$600,000.**

Ga., Atlanta — APARTMENT — Lincourt Apartments, Inc., 780 Lindberg Dr. N.E., 15 apartment bldgs. Owner builds. **$280,000.**

●**Ga., Decatur**—APARTMENT UNITS—University Apartments, Inc., c/o contractor, 276 apartment units, to Williams Constr. Co., 1032 13 St., Columbus. Approx. **$1,000,000.**

Ill., Chicago—HOSPITAL—American Hospital, 862 W. Irving Park, Zone 13, 3 story, concrete, brick hospital addn., to J. Emil Anderson & Son, 1809 Balmoral St., Zone 40. **$250,000.** H. T. Fisher & Assoc., 322 W. Washington St., Zone 6, archts. CD 2/13,46.

Ill., Chicago—HOUSES—Best Homes, Inc., 815 E. 93 St., Zone 19, 30 houses, Green and 113 Sts., Zone 43, to Burnside Constr. Co., 815 E. 93 St., Zone 19, **$100,000.** Awarded 10/28. Harold E. Anderson, 7015 S. State St., Zone 37, archt.

Ill., Chicago — APARTMENT — David Brotman, c/o DeGolyer & Schmidt, archts., 30 N. Dearborn St., 12 story, brick, rein.-con. apartment, to A. L. Jackson Co., 161 E. Erie St.*** plumbing, to M. Weil & Sons, 200 E. Superior St.***heating, to Advance Heating & Air Conditioning Corp., 117 N. Desplaines St.

Ill., River Forest (Br. Oak Park)—HOUSING—Jo-Al Enterprises, 1541 Clinton St., River Forest, six 36 two story housing units, Harlem Ave. and Lemoyne St., own forces. **$300,000.** Carl Kastrup, 7346 Madison St., Forest Park, archt.

Md., Baltimore — MEMORIAL CHAPEL — Loyola College, Charles St. and Cola Spring Lane, stone, steel, memorial chapel, to John McShain, Inc., 3 W. Franklin St., Approx. **$500,000.** CD 10/19.

Md., Dundalk—RESIDENCES—Logan Village, Inc., 286 5 Ave., New York, N. Y., fifty 24x36 ft. concrete residences, to C. T. Wills, P. O. Box 3929, Dundalk. **$500,000.**

Md., Towson—RESIDENCE HALL—Goucher College, St. Paul and 23 Sts., Baltimore, 2 and 3 story, stone, block, 4 unit, Residence Hall 3, and offices, to Harry A. Hudging, 15 E. 21 St., Baltimore. **$800,000.** Bids 10/27. Henry Adams, Inc., 2315 N. Charles St., Baltimore, mech. engr. CD 10/20.

Mo., St. Louis—STORE, etc.—Evrow Realty Co., c/o Wedemeyer & Hecker, archts., 310 Cotton Belt Bldg., 111 N. 7th St., Zone 2, general contract 2 story, bsmnt., masonry, steel store and office, air-conditioning, Riverview Blvd. and McLaran Ave., to A. H. Haeseler Bldg. & Contg. Co., 2346 Palm St., Zone 7. Bids 11/11. CD 10/4.

Mont., Helena—HOUSING—Carson Constr. Co., First National Bank Bldg., 40 dwellings. Owner builds. **$260,000.**

Neb., Omaha — APARTMENTS — Metcalfe Constr. Co., 854 Omaha Natl. Bank Bldg., apartment 32 and Farnam Sts., **$450,000;** apartment, 49 and Dodge Sts., **$500,000,** day labor.

●**N. J., Irvington**—APARTMENT DEVELOPMENT—Maurice & George Levine, c/o Kelly & Gruzen, archts., 60 Fifth Ave., New York, 3, N. Y., The Parkway Garden Apartment development for 1344 families on 23 acres site bounded by Eastern Parkway, Grove St., Berkeley Terrace and Maple Ave. Owner builds. **$20,000,000.**

N. J., New Rochelle—APARTMENT—I. A. Lipsig, 271 North Ave., 48 family garden apartment, Palmer Ave. between Spencer Dr. East and Spencer Dr. West. Owner builds. **$450,000.** Lee Perry, 419 North Ave., archt.

●**N. Y., Brooklyn**—APARTMENT—Bay Shore Gardens, Inc., 616 Caton Ave., Zone 18, 6 story apartment, 14 and 26 Cass Pl. and 2906-12 Brighton 12 St. Owner builds. **$1,500,000.** CD 7/13.

●**N. Y., Great Neck**—HOUSES—Saddle Rock Homes Corp., Sam Berger, pres., Hawthorne Lane, Saddle Rock, 200 houses on 106 acre site bounded by Bayview Ave., Hawthorne Lane and Little Neck Bay. Owner builds. **$5,000,000.** Edwin C. Kline & A. H. Salkowitz, 37-60 82 St., Jackson Heights, archts.

N. Y., Mt. Vernon—COMMUNITY CENTER—Young Men and Young Women Hebrew Assn., 30 N. 10 Ave., community center, Oakley Ave., to A. Barbaresi, Inc., 20 E. 1 St. Approx. **$534,000.** CD 9/29/48.

Ore., Salem — APARTMENT — Victor N. Jones & Assoc., Republic Bldg., Seattle, Wash., 6 story 101 unit rein.-con. apartment, Center and Union St., to Republic Constr. Co., 1618 N. Las Palmas St., Hollywood, 28, Calif., Approx. **$800,000.** Awarded 10/29. CD 9/6.

Tenn., Maryville—PINE ARTS CENTER—Maryville College, Maryville, fine arts center, to Johnson & Willard, 422 W. Front Ave., Knoxville. Approx. **$300,000.** Bids 9/30. CD 9/7.

●**Tenn., Memphis** — APARTMENT — J. W. McNeese, c/o contractor, 10 story apartment, to McNeese Constr. Co., Commerce Title Bldg. Approx. **$1,000,000.**

●**Tex., Baytown** — DWELLINGS — Baytown Constr. Co., c/o R. F. Sturman Sterling Bldg., Houston, 168 dwellings. Owner builds. Approx. **$1,009,000.** CD 8/29.

Tex., Dallas — DWELLINGS — Vernon & James Smith, Liberty Bank Bldg., 100 dwellings. Owner builds. Approx. **$710,000.** CD 11/7.

●**Tex., Houston**—HOSPITAL—Methodist Hospital, 3020 San Jacinto St., 300 bed hospital, to Thomas Hate & Sons, 1107 Girard St., **$3,236,000.** Watkins, Nunn, McGinty & Phenix, 2425 Ralph St., archts. W. P. Moore, 4605 Montrose Blvd., and Ray L. Jenkins, 4316 Blossom St., engrs.

Tex., San Antonio — SUPER MARKETS — H. E. Butt Grocery Co., Robstown Rd., Corpus Christi, supermarkets and grocery, off Bandera Rd. Approx. **$250,000,** CD 6/6; in Harlandale sect., Approx. **$250,000,** CD 3/30 both day labor.

Wis., Shorewood—APARTMENT, etc.—Ardmore Terrace Corp., c/o C. R. Knuth, archt., 161 W. Wisconsin Ave., Milwaukee, Zone 3,

56 apartment units and 6 stores, to Economy Builders, 4225 W. North Ave., Milwaukee, Zone 8, **$580,000.**

Ont., Hamilton — LIBRARY, etc. — R. W. Frost, dir. McMaster University, Hamilton, general contract David B. Mills Memorial Library and Alumni Recreation Bldg., to W. H. Yates Constr. Co., Ltd., 400 Wellington St. W., Hamilton***plumbing, to Canadian Comstock Co., Ltd., 36 James St. S., Hamilton***electrical work, to Roxborough Electric Ltd., 26 Bloor St. W., Toronto. Est. Approx. **$675,000.** Bids 10/20. CD 10/14, under Public Bldgs.

Ont., Windsor—DWELLINGS—R. Slutsky, 2132 Victoria St., 100 one story, bamnt., brick, concrete dwellings, to Economy Home Builders, 2132 Victoria St. Approx. **$800,000.**

Que., Montreal—APARTMENT HOUSE—J. E. Vincent, 592 E. Linge St., Montreal, apartment, Wilderton Rd. Owner builds. Approx. **$260,000.**

INDUSTRIAL BUILDINGS

BIDS ASKED

November 21

●**Pa., West Point**—RESEARCH LABORATORY—Sharp & Dohme, 640 N. Broad St., Phila., research laboratory. $4,000,000. W. Stuart Thompson & Phelps Barnum, 250 Park Ave., New York, N. Y. archts. CD 6/21.

November 23

Ga., Augusta—WAREHOUSE, etc.—Reynolds Market Corp., c/o Patchen & Zimmerman, engrs., Daniel Field Airport, Augusta, warehouse and office.

November 25

Wis., Milwaukee—GARAGE—Garfield Chevrolet, Inc., 2976 N. 3 St., Zone 12, 1 story 115x160 ft., steel, brick garage, concrete fdn. and floor, Ebling, Plunkett & Keymar, 1220 N. Milwaukee St., Zone 2, archts.

●**N. Y., Johnstown** — STATION, POWER PLANT—New York State Gas & Electric Co., 62 Henry St., Binghamton, Goudy Station, power plant, $7,000,000-$8,000,000. Gilbert Assoc., Inc., 412 Washington St., Reading, Pa., engr.

Bids Asked

Tex., Beaumont — WAREHOUSE — Sears, Roebuck & Co., 500 Orleans St., warehouse, George L. Dahl, 2101 N. St. Paul St., Dallas, archt. CD 10/10.

Tex., Laredo — POWER PLANT — Central Power & Light Co., 120 N. Chaparral St., San Antonio, electrical power plant. $600,000. George A. Mills, c/o owner, engr. CD 10/13/48.

SOON LETS CONTRACT

Fla., Miami—PLANT—S. Y. Guthrie & Assoc., c/o Smith & Mills archts., Mercantile Bank Bldg., Dallas Tex., soon lets contract food distribution plant. Approx. $75,000.

Ga., Atlanta—PLANT—Swift & Co., c/o Jack Oliff, 565 Wells St., soon lets contract plant addn.

Ga., Whitesburg—POWER PLANT—Georgia Power Co., 75 Marietta St. N. W., Atlanta, soon lets contract electric Power plant for Yates, Coweta and Carroll Counties. CD 8/12/48.

Minn., Elk River—GENERATING PLANT—Rural Co-operative Power Assn., Maple Lake, soon lets contract 174x94 ft., 1,300,000 cu. ft. steel, concrete, brick generating plant superstructure, 80 ft. high. Approx. $800,000. Long & Thorshov, 400 Metropolitan Life Bldg., Minneapolis, archts., R. D. Thomas & Assoc., 400 Metropolitan Life Bldg., Minneapolis, engrs. CD 7/27.

Neb., Omaha—WAREHOUSE—Omar, Inc., 1910 Harney St., soon lets contract warehouse, $100,000. Duria Eng. Co., 500 5 Ave., New York, N. Y.

Okla., Oklahoma City—PLANT—Oklahoma Industries, Inc., J. E. Fair, mayor, First Natl. Bldg., Zone 2, soon lets contract 150x200 ft mfg. plant, **$90,000.** Holifield & Stone, Colcord Bldg., archts.

LOW BIDDERS

Ga., Atlanta—WAREHOUSE—The Grinnell Co., c/o Stevens & Wilkinson, archts., 157 Luckie St. N. W., cancelled bids to have been opened Nov. 9, warehouse. Approx. $75,000. Project postponed. CD 10/25.

S. C., Bennettsville—FACTORY — Marlboro Development Corp., Bennettsville, rejected bids Oct. 26, factory. CD 10/11.

CONTRACTS AWARDED

Ga., Hartwell — MILL — Textron Southern, Inc., Hartwell, textile mill addn., to Daniel Constr. Co., Greenville, S. C., Approx. **$500,000.**

Ill., Chicago—PLANT—United States Brewing Co., 2319 N. Elston St., Zone 47, 2 story, bamnt., 85x175 ft., steel, brick, concrete bottling plant, to M. J. Boyle Co., 2840 N. Clark St., Zone 4. **$440,000.** CD 9/23.

●**Ind., Fort Wayne** — WAREHOUSE — S. S. Kresge Co., 2727 2 Ave., Detroit, Mich., general contract 1 and 2 story, structural steel, concrete, brick, 367,000 sq. ft. warehouse, Ferguson Rd. near Baer Airfield, to Hagerman Constr. Co., 402 E. Superior St. Est. **$1,330,000.** Bids 10/13. CD 10/10.

Miss., Stonewall—WEAVE, etc.—Erwin Cotton Mills Co., c/o contractor, weave bldg. and Bldg. 2 texten., to Fiske-Carter Constr. Co., Spartanburg, S. C., **$509,618.** Bids 10/25. CD 10/25.

●**N. J., Plainfield** — PLANT — International Plainfield Motor Co., 935 S. Second St., design and construction 1 story mfg. plant addn., Front St., to Wigton-Abbott Corp., 1225 South Ave., Approx. **$1,000,000.**

●**Tenn., Nashville** — ELECTRIC CENTER — Nashville Electric Service, Church St., service center and office, to Foster & Creighton, American Natl. Bank Bldg., 4 Approx. **$2,250,000.** Bids 11/1. CD 11/7, under LB.

●**Tex., Houston**—PIPE MILL—A. O. Smith Corp., M. Esperson Bldg., pipe mill, to The Austin Co., M & M Bldg. Approx. **$4,500,000.** CD 10/19.

Alta., Edmonton—BAKERY, etc.—Weston's Bakeries Ltd., 10149 106 St., 203x449 ft. bakery and office, to Bennett & White of Edmonton, Ltd., 11239 83 St. Approx. **$500,000.** Rule, Wynn & Rule, 300 Birks Bldg., archts. CD 8/18.

UNCLASSIFIED

BIDS ASKED

November 21

N. Y., New York—SHED and PIER—Comr. Marine & Aviation, Pier A, North River, Zone 4, rehabilitation Shed and Pier No. 74, foot of W. 34 St., North River, Contr. 2657, Manhattan Boro. Plans deposit $4.50.

November 23

Ont., Gore Bay—WHARF—J. M. Somerville, secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf exten. Approx. $39,000. R. Blais, c/o owner, engr.

Ont., Port Lambton—HARBOR IMPRVS.—J. M. Somerville, secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., harbor imprvs. Approx. $35,000. Plans deposit $20. R. Blais, c/o owner, engr.

Que., Gascons—WHARF EXTENS.—J. M. Somerville, secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf exten. Approx. $59,000. Plans deposit $20. R. Blais, c/o owner, engr.

Que., Levis—WHARF—J. M. Somerville, secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., reconstr. pier, 82,370 sq. ft. steel sheet piling 531,000 lbs. structural steel, and iron, tie-rods, etc. 675 cu. yd. concrete 39,400 lb. reinforcing steel, 44,500 cu. yd. stone filling. Approx. $350,000. R. Blais, c/o owner, engr.

Que., Miguasha—WHARF, etc.—J. M. Somerville, secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., imprv. wharf and breakwater. Approx. $30,000. Plans deposit $20. R. Blais, c/o owner, engr.

Que., Mont Louis—WHARF—J. M. Somerville, secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf exten. Approx. $83,000. Plans deposit $25. R. Blais, c/o owner, engr.

Que., Rimouski—WHARF—J. M. Somerville, secy. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf reconstr. on west side and outer end. Approx. 1,150x 5 Plans deposit $50. R. Blais, c/o owner, engr.

November 25

Neb., Omaha—SWIMMING POOL, etc.—City, City Hall, 18 and Farnam Sts., swimming pool, bathhouse, tennis courts and recreational facilities, at Miller Park. $200,000. D. M. Robbins, Seliptrick Bldg., archt. E. W. Woodbridge, city engr. CD 6/14.

November 28

Nebraska—RURAL DISTRIBUTION LINES—Eastern Nebraska Public Power Dist., Syracuse, 26.7 mi. rural distr. lines, Johnson, Nemha and Richardson Counties; line conductor and transformers to be furnished by owner. Approx. $50,000. Henningson Eng. Co., Standard Oil Bldg., Omaha, engr. CD 9/12.

N. C., Charlotte—RECREATION CENTER—City, City Hall, 600 E. Trade St., recreation Center for Negroes, swimming pool, club house-center, Statesville Ave. $126,000. J. Norman Pease & Co., 119½ E. 5 St., archts. CD 6/17.

November 29

Calif., Los Angeles—LIGHTING SYSTEM—Los Angeles Co., 501 Hall of Records, street lighting sys. in Elva Ave., C. I. 1292, Willowbrook, $110,200. C. C. Arnold, co. engr. CD 10/13.

SOON LETS CONTRACT

Kansas—RURAL DISTRIBUTION LINES—P. R. and W. Electric Co-operative, Wamego, soon lets contract 181.96 mi. rural distr. lines, conversion of 50.5 mi. lines, Pottawattamie, Geary, Wabaunsee and Jackson Counties. $260,000. Frank Horton & Co., Lamar, Mo., engr. CD 10/27/47.

LOW BIDDERS

Md., Baltimore—SWIMMING POOL, etc.—City, City Hall, Oct. 28, Druid Hill Park addns., alterations, incl. 75x175 ft. swimming pool, 35x55 ft. wading pool, 45x75 ft. diving pool, 20x50 ft. filter room, from Allied Contractors, Inc., 204 E. Preston St., Zone 2. **$219,600.** R. E. L. Williams, 412 Municipal Bldg., engr. CD 10/19.

N. Y., Flushing—PARK IMPRVS.—Comr. Parks, at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, Zone 21, Nov. 1, clearing, grading, seeding in unimproved areas of Flushing Meadow Park between Long Island R.R. and Union Turnpike, Contr. Q-99-449, from Tully & DiNapoli, 30-11 12 St., Long Island City, **$140,900;** construct playground from Barclay to Sanford Aves. between Bowne and Union Sts. adjacent to P.S. 20, Contr. No. Q-308-149, from Moser Constr. Co., 24-16 Bridge Plaza Square, Long Island City, **$112,577.** CD 10/24.

N. C., Kinston — POWER PLANT PIPING, etc.—Caswell Training School, c/o S. H. Stroud, bus. mgr., Kinston, Nov. 2, power plant piping and distr. lines, from J. L. Powers, Bennettsville, S. C., **$123,810,** Wiley & Wilson, 903 Peoples Bank Bldg., Lynchburg, Va., engrs.

North Dakota—RURAL DISTRIBUTION LINES—McKenzie Electric Co-operative, H. Hanson, mgr., Watford City, Oct. 27, 12.1 mi. rural distr. lines, 10.5 mi. underbuilding, 332 mi. rural distr. lines, McKenzie Co., from Reither Constr. Co., Aitkin, Minn., **$379,688.** CD 10/31, under LB.

Oregon—RURAL DISTRIBUTION LINES—Benton-Lincoln Electric Cooperative, 561 Van Buren St., Corvallis, rejected bids Sept. 23, 74.41 mi. rural distr. lines, Benton and Lincoln Coppities. Will re-advertise. C.A. **$143,530. (Correction**-status). CD 10/12, under CA.

Wisconsin—PIPELINE—Michigan-Wisconsin Pipeline Co., 704 Michigan Bldg., Detroit, Mich., project postponed until spring, 184 mi. 4- to 14-in. natural gas pipeline from Waukesha to Green Bay. CD 10/5.

CONTRACTS AWARDED

Alabama—RURAL DISTRIBUTION LINES—Clarke-Washington Electric Membership Co-operative Corp., Jackson, 12.95 mi. 44 kv rural distr. lines, Clarke and Washington Counties, to G. T. Key Co., 1212 S. Hull St., Montgomery, **$52,652;** 364.8 mi. rural distr. lines, Clarke and Washington Counties, to Trans-Electric Co., 106 E. Broadway, Louisville, Ky., **$349,174.** Lanier Eng. Co., 102½ Elm St., Troy, engrs. CD 7/18.

Alabama—RURAL DISTRIBUTION LINES—Joe Wheeler Electric Membership Corp., Hartselle, 283.3 mi. rural distr. lines, Morgan Co., to Western Constr. Co., Inc., Jackson, Tenn., **$395,998.** McWhorter & Franklin Engineers, 2535 Franklin Rd., Nashville, Tenn., engrs. CD 12/13/48.

Arizona—RURAL DISTRIBUTION LINES—Navajacho Electric Co-operative, Inc., Lakeside, 54 mi. 69 kv. transmission line, and 174 mi. rural distr. line, Navajo Co., to Walker Constr. Co., 5151 E. Jefferson St., Dallas, Tex., **$139,553** and **$208,548** respectively. Tynes & Loftin, 512 Heard Bldg., engrs.

Arkansas—RURAL DISTRIBUTION LINES—Ozarks Rural Electric Co-operative Corp., Fayetteville, 188.37 mi. rural distr. lines, Washington Co., to Southern Line Constr. Co., 818 Falls Bldg., P.O. Box 1838, Memphis, 1, Tenn., **$224,816.** Frank Horton & Co., Lamar, Mo., engrs.

Calif., East Los Angeles—STADIUM—Los Angeles Bd. Educ., 1425 S. San Pedro St., 449x773 ft. Stadium Bldg. A, East Los Angeles Junior College, to V. O. Brunzell Co., Box 432, Gardena, Calif. Est. **$857,372.** Bids 10/20. CD 10/27, under LB.

Calif., Long Beach — PIER BULKHEADS, etc.—City, bulkheads and fill at Pier D, Berths 27-31, to Guy F. Atkinson Co., Box 259, **$634,500.** Bids 10/25, awarded 10/27. CD 12/6/44.

Georgia—RURAL DISTRIBUTION LINES—Jackson Electric Membership Corp., Jefferson, rural distr. lines, Jackson Co., etc., to Alrich Constr. Co., Augusta, **$189,892.** Bids 11/3. CD 10/21.

Kansas—RURAL DISTRIBUTION LINES—C. & W. Rural Electric Co-operative Assoc., Inc., Clay Center, 189.3 mi. rural distr. lines, Clay Co., to Rhea Constr. Co., 230 S. Phillips St., Salina, labor **$53,262,** materials **$189,000,** total $242,262. CD 7/24/48.

Kansas—RURAL DISTRIBUTION LINES—Coffey County Rural Electric Co-operative Assoc., Inc., Burlington, 482.81 mi. rural distr. lines, Coffey Co., to Weikel Constr. Co., 1150 Fairview Ave., Fort Wayne, Ind. **$638,873.** Flora Eng. Co., 1717 E. Colfax, Denver, Colo., engr. CD 8/12.

Kansas—RURAL DISTRIBUTION LINES—D. S. & O. Rural Electric Co-operative Assoc., Inc., Solomon, 97 mi. rural distr. lines, Dickenson Co., to Pendleton Constr. Co., 320 Leonhardt Bldg., Oklahoma City, Okla., labor **$35,157,** materials **$97,000,** total $132,157. Richardson Electric Eng. Co., P.O. Box 263, Solomon, engr. CD 8/12/48.

Kansas—RURAL DISTRIBUTION LINES—Western Co-operative Electric Assoc., Wakeeney, 152.92 mi. rural distr. lines, Trego Co., to A. F. Reis, 702 National Bank Bldg., Topeka, **$324,548.** Frank Horton & Co., Lamar, Mo., engrs. CD 10/7.

Michigan—DRIVE-IN THEATRE—C. H. Martin, Jr., 401 S. 15 St., St. Joseph, Mo., 400 car drive-in theatre, on Rte. 59, 1 mi. northeast of here, separate contracts. **$100,000.** CD 11/1.

Kan., Ottawa—ELECTRIC DISTRIBUTION SYSTEM—City, electric distr. sys. imprvs., to Reese-Hilburn Electric Co., 123 W. 8 St., Kansas City, Mo., **$123,1?5.** Bids 10/28. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs.

La., Lafayette — MOTOR COURT — Lionel Jeannard, Lafayette, motor court, to Joe Gosser, Jr., Lafayette, **$100,000.**

Minn., Austin—GRANDSTAND—City, J. H. Weiland, reedr., general contract rein.-con. grandstand in Municipal Ball Park, to N. A. Peterson, Austin, **$53,000.** Bids 10/26. H. V. Feehan, 1004 Marquette Ave., Minneapolis, archt.

Mississippi — RURAL DISTRIBUTION LINES—Alcorn County Electrical Power Assoc., Corinth, 100 mi. rural distr. lines, Alcorn Co., to Irby Constr. Co., 817 S. State St., Jackson, labor **$28,260**, materials **$104,000**, total $128,260. CD 7/28.

Mississippi — RURAL DISTRIBUTION LINES—Pearl River Valley Electric Power Assoc., Columbia, 122 mi. electric distr. lines, to G. T. Key Co., 1212 S. Hull St., Montgomery, Ala., **$105,519.** Bids 9/15, Bowman & Bowman, Greenwood, engrs. CD 9/16.

Mississippi — RURAL DISTRIBUTION LINES—Southern Pine Electrical Power Assoc., Taylorsville, 350 mi. rural distr. lines, Smith Co., to Hamilton & Rowell, P. O. Box 261, Laurel, **$302,610.** Bowman & Bowman, Greenwood, engrs. CD 9/13.

Missouri—RURAL DISTRIBUTION LINES—Tri County Electric Co-operative, Lancaster, 358 mi. rural distr. lines Adair Co. to Basanda Constr. Co., 2925 N. W. 39 Terrace, Oklahoma City, Okla., **$437,408.**, Stanley Eng. Co., Hershey Bldg., Muscatine, Ia., engr. CD 1/31.

Montana — RURAL DISTRIBUTION LINES—Northern Electric Co-operative, Opheim, 254.59 mi. rural distr. lines, Valley Co., to Hi-Line Constr. Co., Wolf Point, labor **$92,800**, materials **$254,000**, total $346,800. Bids 8/24, CD 8/17.

●**Nebraska, Iowa, South Dakota, North Dakota and Minnesota**—OIL PIPELINE—Great Lakes Pipe Line Co., Bryant Bldg., Kansas City, Mo., gasoline and fuel oil pipeline from Omaha, Neb. to Sioux City, Ia., Sioux Falls, S. D., Fargo, N. D., and Alexandria, Minn., incl. 12 in. pipeline from Omaha, Neb. to Sioux Falls, S. D., expansion 4 delivery terminals, expansion 2 pump stations and 2 new pump stations. Owner builds. **$7,900,000.** C. C. Keane, c/o owner, ch. engr.

New Mexico—GAS LINES—El Paso Natural Gas Co., Bassett Tower, El Paso, Tex., 82.1 mi. natural gas lines, running from main line in Alamogordo, White Sands Proving Grounds) Holloman (Air Force Base), Purchase and Hire. Approx. **$600,630.** CD 10/20.

New York—STATION and TUNNEL LIGHTING EQUIP.—Bd. Transportation, 250 Hudson St., New York, Zone 13, furnishing, installing station and tunnel lighting equip. for Line D-Hillside Ave. Exten., from 178 St. to 184 Pl., Queens Boro, to E. A. Kahn & Co., Inc., 163-18 Jamaica Ave., Jamaica, **$318,500.** Bids 10/14. CD 9/28.

North Carolina — RURAL DISTRIBUTION LINES—Tri-County Electric Membership Corp., Goldsboro, 199.4 mi. rural distr. lines, Wayne Co., to Durham Electric Constr. Co., 113-19 Orange St., Durham, **$231,706.** L. E. Wooten & Co., Capital Club Bldg., Raleigh, engrs.

North Dakota — RURAL DISTRIBUTION LINES—Cass County Electric Co-operative, Inc., Kindred, 314.33 mi. rural distr. lines, Cass Co., to Zontelli Constr. Co., Ironton, Minn., labor **$79,488.**, materials **$314,000**, total **$393,488.** Bids 9/8. CD 9/29, under LB.

North Dakota — RURAL DISTRIBUTION LINES—McKenzie Electric Co-operative, Inc., Watford City, 362.4 mi. rural distr. lines, McKenzie Co., to I. O. Teigen Constr. Co., 1954 University Ave., St. Paul, Minn., labor **$97,421.**, materials **$367,000**, total $459,421. Banister Eng. Co., 1586 University Ave., St. Paul, Minn., engr.

North Dakota — RURAL DISTRIBUTION LINES—R. S. R. Electric Co-operative, Inc., Milnor, 264.55 mi. rural distr. lines, Sargent County, to Electric Power Construction, Milnor, labor **$49,450,** materials **$204,000**, total $253,450. CD 12/27.

North Dakota — RURAL DISTRIBUTION LINES—Tri-County Electric Co-operative, Inc., Carrington, 236 mi. rural distr. lines, Foster Co., to Sorkness Constr. Co., Box 1482, Fargo, **$236,618.** Bids 8/4. CD 7/26.

Oklahoma—RURAL DISTRIBUTION LINES—Canadian Valley Electric Co-operative, Seminole, 236.8 mi. rural distr. lines, Hughes Co., to Mid-State Constr. Co., Karnes City, Tex., labor **$101,216.**, materials **$236,000**, total $337,216. E. R. Taylor & Assoc., 4107-A—E. 11 St., Tulsa, Zone 4, engrs. CD 5/27.

Oklahoma—RURAL DISTRIBUTION LINES—East Central Oklahoma Electric Co-operative, ●Okmulgee, 261.15 mi. rural distr. lines, Okmulgee Co., to Lemco Constr. Co., Muskogee, **$117,412.** E. R. Taylor & Assoc., 4107-A E. 11 St., Tulsa, Zone 4, engrs. CD 6/30.

Oklahoma—RURAL DISTRIBUTION LINES—Rural Electric Co-operative, Inc., Lindsay, 212.9 mi. rural distr. lines, Garvin Co., to R. E. Mattison & Co., Box 458, Britton, **$255,617.**, Archer & Handley, Box 103, Ada, engrs. CD 5/27.

Oregon — RURAL DISTRIBUTION LINES—Northeast Clackamas County Electric Co-operative, Inc., Sandy, 21.18 mi. 34.5 kv rural distr. lines, Clackamas Co., to Ripp Electric Co., 3045 Portland Rd., Salem, **$82,862.**, Civil Eng. Service, 2626 S. E. Ankeny St., Portland, Zone 5, engr. CD 10/18/46.

Pa., Johnstown — MEMORIAL ARENA — Cambria County War Memorial Assoc., 1st. Natl. Bank Bldg., 1 story, 240x260 ft. granite memorial arena, to Berkbilde Bros., Swank Bldg., **$648,766.** Bids 10/10, CD 10/20, under LB.

South Carolina—RURAL DISTRIBUTION LINES—Palmetto Electric Co-operative, Ridgeland, 116 mi. rural distr. lines, Allendale, Hampton, Jasper and Beaufort Counties, to Chambless & White, Alamo, Ga., **$125,603.** Bids 10/27. CD 10/24.

South Dakota — RURAL DISTRIBUTION LINES—Tri-County Electric Assoc., Plankinton, 379.1 mi. rural distr. lines, and Fred Olan Co., to I. O. Teigen Constr. Co., 1954 University Ave., St. Paul, Minn., **$332,884.** CD 5/13.

South Dakota — RURAL DISTRIBUTION LINES—Whetstone Valley Electric Assoc., Inc., Milbank, 132.5 mi. rural distr. lines, Grant Co., to Davis-Hydaker Co., Spencerville, O., labor **$38,677.**, materials **$132,000**, total $170,677. CD 5/16.

Tennessee—RURAL DISTRIBUTION LINES—Johnson City Power Bd., Johnson City, 260 mi. rural distr. lines, Washington Co., to Irby Constr. Co., 817 S. State St., Jacksonn, Miss., **$405,384.** CD 9/12.

Texas — RURAL DISTRIBUTION LINES — Midwest Electric Co-operative, Inc., Roby, 260 mi. rural distr. lines, Fisher Co., to Basanda Constr. Co., 2925 N. W. 39th Terrace, Oklahoma City 7, Okla., **$190,117.** H. N. Roberts & Assoc., 1310 Avenue Q, Lubbock, engrs. CD 8/23/48.

Texas — RURAL DISTRIBUTION LINES — Navarro County Electric Co-operative, Corsicana, 140.9 mi. rural distr. lines, Navarro Co., to Ericson Constr. Co., Box 364, Spur, labor **$46,542.**, materials **$140,000**, total $186,542. J. H. Flood & Co., 2906 Franklin St., Waco, engrs. CD 11/29/48.

Texas — RURAL DISTRIBUTION LINES — North Plains Electric Co-operative, Inc., Perryton, 430 mi. rural distr. lines, Ochiltree Co., to Thompson, Haight & Keiser, 2006 N. Portland St., Oklahoma City, Okla., **$388,240.** H. N. Roberts & Assoc., 1310 Avenue Q, Lubbock, engrs. CD 9/27/48.

Tex., Commerce—STADIUM—East Texas State Teachers College, Commerce, stadium and field house, own forces. **$300,000.** CD 8/12.

Tex., Waco—STADIUM—Baylor University, Waco, stadium, to Swigert Constr. Co., Waco, **$969,998.** Bids 11/2, awarded 11/7. CD 9/30.

Virginia—RURAL DISTRIBUTION LINES—Community Electric Co-operative, Suffolk, 66.3 mi. rural distr. lines, Nansemond Co., to Dewey G. Weddle & Co., National Bank of Commerce Bldg., Norfolk, labor **$26,271,** materials **$66,000,** total $92,271. B. O. Vannort Engineers, Inc., 513 S. Tryon St., Charlotte 2, N. C., engr. CD 2/3.

Virginia—RURAL DISTRIBUTION LINES—Powell Valley Electric Co-operative, Jonesville, 176 mi. rural distr. lines, Lee Co., to Killoren Electric Co., Appleton, Wis., **$260,300.** Pat M. Sullivan, 905 Stahlman Bldg., Nashville 3, Tenn., engr. CD 2/28.

●**Alberta, Saskatchewan, Manitoba and Wisconsin**—OIL PIPELINE—Interprovincial Pipe Line Co., Edmonton, Alta., 450 mi. 20 in. oil pipeline from Edmonton, Alta., to Regina, Sask., to Canadian Comstock Co., Montreal and Dominix & Co., Ltd., 332 Seventh Ave. W., Calgary, Alta;***340 mi. 16 in. pipe from Regina, Sask., to Gretna, Man., to Williams Bros., 17 Ave. and First St. W., Calgary, Alta;***260 mi. 18 in. pipe from Gretna, Man., to Superior, Wis., U.S.A., to Anderson Brothers, 219 15 Ave., P.O. Box 1571, Rockford, Ill., U.S.A.***steel plate, to Steel of Canada, Ltd., Wilcox St., Hamilton, Ont., and Page-Hersey Tubes, Ltd., Welland, Ont., **$8,000,000*****diesel engines and speed increases, to Dominion Eng. Works Ltd., Lachine, Que., **$850,000** and **$105,000** respectively***pumps, to Canada Iron Foundries, Ltd., 227 S. Maurice St., Three Rivers, Que.***waste heat boilers and heat exchangers, to Foster Wheeler Ltd., 117 Eastchester St., St. Catherines, Ont., **$107,000*****enamel and primimg solution for coating pipe, to By-Product Coke Co. of Canada Ltd., Port Arthur, Ont., **$630,000*****glass pipe, to Fiberglas Canada Ltd., First St., Oshawa, Ont., **$280,000***** asbestos felt wrapping, to Canadian Johns-Manville Co. Ltd., 199 Bay St., Toronto, Ont., and Phillip Carey Co., Ltd., 10 College St., Lennoxville, Que., **$350,000.** Total est. about $14,700,000. CD 6/27.

Alta., Edmonton—GRANDSTAND—Edmonton Exhibition Assn., J. Paul, mgr., 8,000 seating grand stand, to Christenson & Macdonald 612 Tegler Bldg., Edmonton, Approx. **$500,000.** CD 6/10.

●**Quebec**—RAILWAY RELOCATION—Robert H. Saunders, chn. c/o Hydro Electric Power Comm. of Ontario, 620 University Ave., Toronto, Ont., 37.5 mi. railway grading and structures Canadian Pacific Railway relocation in La Cave Development, east of Ottawa River in Hoiselchere Twp., Campeau and Gendreau, Part A, extends from about Mile 0 to Mile 21.5 and Part B, extends from Milage 12.5 to Milage 25, to Peacock & McQuigge, Ltd., 1109 Millwood Rd., Leaside. Approx. **$1,113,015** and **$1,136,850** respectively; Park C extends from Milage 25 to Milage 37.5, to Terrem Constr. Co., Ltd., 200 Bay St. Toronto, Ont., Approx. **$798,237.** Grand total, $3,068,102. Bids 9/22. CD 9/1.

Que., Montreal—PIER—National Harbor Bd., West Block, Ottawa, Ont., reconstructing upstream front of Jacques Cartier Pier, to Pentagon Constr. Co., Ltd., 1225 Bishop St., **$928,987.** Bids 11/1. CD 11/4, under LB.

Proposal Advertisements see pp. 87 to 89

OFFICIAL PROPOSALS

Bids: December 8, 1949 (433)

Excavation and Foundation Work of The Cedar Mountain Storage Reservoirs

CONTRACT 159

SEALED PROPOSALS addressed to The Board of Contract and Supply of The Metropolitan District and endorsed "CONTRACT 159—PROPOSAL FOR THE EXCAVATION AND FOUNDATION WORK OF THE CEDAR MOUNTAIN STORAGE RESERVOIRS IN THE CITY OF HARTFORD, CONNECTICUT," will be received at the Executive Office of The Metropolitan District, 115 Broad Street, Hartford, Connecticut, until 2:15 P. M., Eastern Standard Time, Thursday, December 8, 1949, at which time and place they will be publicly opened and read.

Proposals shall be submitted either by messenger, registered mail or Railway Express Agency, Inc.

After the bids are opened and read they will be taken under advisement and the award of the contract, if awarded, will be made as soon thereafter as practicable.

The work to be done consists of the excavation work and the construction of a concrete sub-floor for the proposed storage reservoirs on Metropolitan District property on Cedar Mountain, located in the southwest section of Hartford.

The principal items include about 22,000 cubic yards of unclassified excavation and 1,700 cubic yards of concrete.

Plans and specifications may be obtained on and after November 23, 1949, at the Office of the Deputy Manager and Chief Engineer of The Water Bureau of The Metropolitan District, 2 American Row, Hartford, Connecticut, on deposit of five dollars ($5), in cash or certified or cashier's check, made payable to The Water Bureau of The Metropolitan District, which amount will be refunded if both are returned in good order within one month of date of opening of bids. No deposits will be refunded after that time. Specifications used in making a bid will be considered as returned.

Each proposal must be accompanied by a certified check for an amount covering not less than ten per cent. (10%) of the total amount bid, made payable to The Metropolitan District, and a satisfactory surety bond, as stated in the Information for Bidders, for the total amount bid will be required of the successful bidder for the faithful performance of the contract.

The right is reserved to accept any bid, whether or not the lowest, or to reject any or all bids as the interest of the District may appear to require.

BOARD OF CONTRACT AND SUPPLY,
By: Richard Dillon, Clerk.
Hartford, Connecticut,
November 3, 1949.

(Continued on page 88)

OFFICIAL PROPOSAL

RATE: $1.00 per line (or fraction) per insertion.

CLOSING DATE: 10.00 p.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

OFFICIAL PROPOSALS

(Continued from page 87)

Bids: November 22, 1949 (426)

State Road Work

NOTICE TO CONTRACTOR'S: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of (1) The Highway Law and Special provisions therein for projects financed with federal aid funds (2) Canal Law, (3) The Public Buildings Law, sealed proposals will be received until ten-thirty o'clock A.M., Eastern Standard Time on Tuesday, November 22, 1949 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

HIGHWAY, CANAL & FLOOD CONTROL PROJECTS

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, Dist. Engr., 353 Broadway, Albany, N. Y.				
Albany	FGRC 49-126	Gr. Sep. of the N. Y. C. R. R. with New Scotland-Wolf Hill, S. H. 366 Proj. FG 392(8)	0.44	9" Cem. Conc. Pavt. 24' Wide 1-RR Sep. Beam Br. 64½'	$20,000 Plans $5	$362,000.00
Warren	FARC 49-125	Warrensburg-Chestertown, Pt. 1, S. H. 5157 Proj. FI 490(6)	0.97	8" Cem. Conc. Pavt. 24'-40' Wide = 0.91 mi. Misc. Work = 0.02 Mi.	$14,000 Plans $5	$240,000.00
		DISTRICT No. 2				
		L. KETCHUM Dist. Engr., 109 No. Genesee St., Utica, N. Y.				
Fulton Herkimer, Montgomery, Oneida	RC 49-122	Br. No. 1, S. H. 362; Br. No. 1, S. H. 1817; Br. No. 1, S. H. 461; Br. No. 2, S. H. 869; Br. No. 1, S. H. 5559; Br. No. 1, S. H. 1866B; Br. No. 1, S. H. 562; Br. over Mohawk River, S. H. 5547	....	Painting 8 Bridges	$1,100 Plans $5	$20,000.00
Madison		Buck Street Bridge Over Old Erie Canal, Canastota Village	0.05	R. O. B. Gravel Found. Reinf. Conc. Slab 24'	$1,700 Plans $5	$31,000.00
		DISTRICT No. 3				
		WM. ROBINSON, Dist. Engr., 301 E. Water St., Syracuse, N. Y.				
Onondaga		West Seneca Turnpike Bridge and Dorwin Avenue Bridge, Syracuse Flood Control	0.35	Asph. Conc. Opt. = 0.20 Mi. Asph. Conc. Type 2A on Cem. Con. Fdt. = 0.15 Mi. I-Beam 2 Sp. 40' ea. 2 Alpha I-Beams 62' & 77' 8" Alpha = $172.06	5% of Bid Plans $10	$327,172.80
		DISTRICT No. 5				
		C. R. WATERS, Dist. Engr., 65 Court St., Buffalo, N. Y.				
Cattaraugus	RC 49-124	Hinsdale-Franklinville, S. H. 5544	0.13	Asph. Conc. Opt. = 0.12 Mi. Misc. Work = 0.01 Mi. Raising 24' Span Conc. Deck Br.	$1,500 Plans $5	$26,000.00
Erie	FAC NT 49-1	City of Buffalo: Niagara Thruway (Court St. to Porter Ave.) Proj. U 865(5)	1.05	Asph. Conc. Type 2A - 1.03 Mi. Misc. Work = 0.02 Mi.	$30,000 Plans $5	$511,000.00
Erie	FGC 49-11	Gr. Sep. of the N. Y. C. R. R., Erie R. R., and D. L. & W. R. R. With City of Buffalo: Delaware Avenue Proj. UG 1078(1)	0.26	Asph. Conc. Ty. 2A on 8" Cem. Conc. Found.; 2 R. R. Sep. Plate Girders 95' ea. 1 R. R. Sep. Plate Girder 2 Sp. 95' ea.	$65,000 Plans $10	$1,216,000.00
		DISTRICT No. 6				
		H. F. BRUMM, Dist. Engr., 30 W. Main St., Hornell, N. Y.				
Chemung	FARC C49-127 FARC 49-128	City of Elmira: Lowman Rd., 7.40 FAC 46-3 Elmira-Lowman, S. H. 5207 Lowman Waverly Pt. 1, S. H. 5048 Proj. U 221(4); F221(4); F339(4)		Asph. Conc. Type 1A Opt. or 9" Cem. Conc. Pavt. 2 at 24' Wide (Opt. Proposals)	$105,000 Plans $20	$1,901,000.00
Schuyler	FCRC 49-123	Montour Falls-Alpine, Pt. 1, S. H. 1232	0.58	Asp. Conc. Opt. = 0.53 Mi. 9" Cem. Conc. Pavt. 30' Wd. = 0.05 Mi. Alpha I-Beam 3 Span 84' ea. Alpha = $237.30	$28,000 Plans $5	$477,000.00
		DISTRICT No. 10				
		J. J. DARCY, Dist. Engr., Montauk Hwy. at Little E. Neck Rd., Babylon, L. I., N. Y.				
Bronx	FA CBE 49-5	Cross Bronx Expressway Cont. 9A Proj. U 1084(15)	0.28	Grading & Sheet Asp. Pav. Footings Piers 2, 3, 4 B. R. P. Viaduct F. R. Rigid Frame 2 at 47'-8" ea. R. C. Rigid Frame 2 Sp. 51'-6½" & 47'-7"	$100,000 Plans $20	$1,685,000.00

OFFICIAL PROPOSALS enable you to get the greatest variety of bids —and so to get the lowest prices consistent with the best work.

OFFICIAL PROPOSALS

Bids: November 28, 1949 (434)

Canopy For Seaboard Building No. 2

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
CONTRACT PN-28

Sealed proposals for the construction of a canopy (exclusive of steel framing) for Seaboard Building No. 2 at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 11:30 A. M. Monday, November 28, 1949, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer, and copies will be furnished upon deposit of $10.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, November 17, 1949

Bids: November 28, 1949 (429)

Water Main Construction

WASHINGTON SUBURBAN SANITARY COMMISSION
CONTRACT NO. 695-W

Sealed proposals for constructing approximately 28,800 feet of 20-inch to 42-inch supply line from Columbia Pike near Paint Branch to Wheaton, Montgomery County, Maryland, will be received at the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland, until Monday, November 28, 1949 at 2:00 P.M., Eastern Standard Time, at which place and time they will be publicly opened and read. Alternate bids are asked on cast iron, steel, reinforced concrete prestressed and reinforced concrete cylinder pipe.

Plans and specifications may be obtained from the office of the Chief Engineer of the Commission, Hyattsville, Maryland upon deposit of $10.00, which deposit will be returned to bidders or to those returning plans and specifications in good condition.

Dwight B. Galt
Warren Browning
Leland G. Worthington
Commissioners

U. S. Government

U. S. ARMY, CORPS OF ENGINEERS, NEW ENGLAND DIVISION, Army Base, Boston 10, Mass. Inv. No. Eng-19-016-50-5— Sealed bids will be received at this office until 2:00 P. M., January 4, 1950, and then publicly opened for Construction of a Veterans Administration Hospital, 500 bed General Medical and 400 bed Tuberculosis, West Haven, Connecticut, in accordance with specifications and plans, copies of which are available at this office. Deposit required of $125.00 per set for blueprints, $40.00 for half-size reproductions, and $15.00 for specifications, in form of certified check or postal money order payable to "Treasurer of the United States". (435)

(Continued on page 89)

Official Proposals Columns of

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Official Proposal Division

ENGINEERING NEWS-RECORD

New York 18, N. Y.

OFFICIAL PROPOSALS
(Continued from page 88)

Bids: January 9, 1949 (430)

Concrete Dam and Power Plant

Puerto Rico Aqueduct and Sewer Authority
Santurce, Puerto Rico

Sealed bids will be received by the Puerto Rico Aqueduct and Sewer Authority until 3 o'clock P.M., January 9, 1950, at the office of the Authority in Santurce, Puerto Rico.

Copies of the plans and specifications may be examined and obtained at the office of the Puerto Rico Aqueduct and Sewer Authority, Santurce, Puerto Rico or at the offices of Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York City upon deposit of Twenty-Five ($25.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within twenty (20) days after the date on which bids are received.

The work to be performed is divided into three (3) sections. The principal items of work are:

SECTION F The construction of a gravity-type concrete dam about 210 meters long with a maximum height to spillway crest of about 18 meters together with concrete power plant structure, pumping station substructure, tail race, and installing Tainter gates.

SECTION G Furnishing C.I.F. San Juan, Puerto Rico 8 Tainter gates, each 39 feet wide by 30 feet high, with hoisting mechanisms and electrical control equipment. SECTION H Furnishing C.I.F. San Juan, Puerto Rico 2 hydraulic turbines and 2—1,250 KVA electric generators.

Each proposal must be accompanied by a certified check or bid bond equal to 5% of the proposal. The certified check will be retained to pay for any damage or loss to the Authority, or the liability bond will accrue in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Authority reserves the right to consider bids for fifteen (15) days after their receipt before awarding any contract and the right is reserved to waive any informalities, to accept any bid or to reject any or all of them.

PUERTO RICO AQUEDUCT AND
SEWER AUTHORITY
By SERGIA CUEVAS,
EXECUTIVE DIRECTOR

Buck, Seifert and Jost
Consulting Engineers

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2822) will be received by Bureau of Reclamation, Yuma, Arizona, December 6, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, tunnel, canal lining, and structures for Wellton-Mohawk Canal, station 456+00 to station 969+65, Wellton-Mohawk Division, Gila Project, Arizona. The work is situated from 18 to 25 miles east of Yuma, Arizona. Principal items are approximately: excavation for canal and structures, 2,273,00 cu. yds.; excavation for tunnel, 2,100 cu. yds.; concrete canal lining, 34,000 cu. yds.; concrete in structures, 7,700 cu. yds.; furnishing metalwork, 209,000 pounds; installing metalwork, 250,000 pounds; and other work. Time allowed for completion will be 475 days. For particulars, address Bureau of Reclamation, Yuma, Arizona; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(432)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2825) will be received by Bureau of Reclamation, Fort Peck, Montana, December 6, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of a 115-kilovolt, 3-phase, single-circuit, H-frame-type, wood-pole transmission line, approximately 100 miles in length, between Havre and Shelby, Montana, Fort Peck Project, Montana. Time allowed for completion will be 350 days. For particulars, address Bureau of Reclamation, Fort Peck, Montana; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(431)

SEARCHLIGHT SECTION

Classified Advertising

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** EQUIPMENT: USED OR RESALE

UNDISPLAYED RATE

(Not available for equipment advertising)

$1.20 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.
Replies are forwarded each day as received at each of the offices mentioned without additional charge.
Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.

DISPLAYED RATE

The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
An advertising inch is measured ⅞ inch vertically on one col., 3 col.—30 inches to a page. E.N.R.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

REINFORCED CONCRETE Designers and Detailers. Excellent opportunity for ambitious young man. Bar company or designing engineering experience essential. Send full details first letter to the Hausman Steel Company, P. O. Box 416, Toledo 1, Ohio.

ESTIMATOR WANTED by large General Contracting Firm located in Central Illinois. Applicant to be under 40 years of age, experienced in estimating all types of General Building Construction. If interested, advise age, education, experience and salary desired. P-1296, Engineering News-Record.

WANTED—AN experienced estimator for an established Philadelphia concern for large sewers, tunnels and bridges. State salary, experience, and when available. P-1309, Engineering News-Record.

ESTIMATOR—QUALIFIED to estimate plumbing, heating and power plant jobs running into several million dollars. Prefer mechanical engineering graduate with field experience. Permanent position for the right man with salary and bonus commensurate with qualifications and results. Submit experience record and educational background for review and if interesting to us, personal interview at our expense will be arranged. Reply immediately to Virginia Engineering Co., Inc., Newport News, Virginia, Attention: A. M. Miller.

(Continued on page 90)

GLENDALE, CALIFORNIA SEEKING PUBLIC UTILITY MANAGER

The City of Glendale, California, is currently inviting applications for the position of General Manager and Chief Engineer of the Municipal Water, Power and Light Department at a salary of $12,600 per year. This system is already nationally recognized, but rapid population increases in Southern California offer unlimited opportunities for expansion and progress. The city administration wish to consider only those persons who have had at least ten years administrative experience in utility work, and who are graduate electrical, mechanical, or civil engineers. Qualifications will be carefully considered and the appointment of the person selected will be immediate and permanent. Inquiries and biographical data should be directed to the City Manager's Office. Attention: T. L. Sharp, 613 East Broadway, Glendale, California, before January 15, 1950.

STRUCTURAL DRAFTSMEN:

Needed Several First Class experienced detailers and checkers. Only those with previous structural fabricating shop experience need apply. Give complete information to Personnel Dept.

Consolidated Western Steel Corp.
Orange, Texas

BRIDGE DESIGNERS
DESIGNER DRAFTSMEN
RESIDENT HIGHWAY ENGINEERS

Experienced men wanted. State qualifications, age, salary and date available in first letter. Construction period, 24 months. Location, Eastern or Western Pennsylvania.

P-1078, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

CAREER . . .

For a Young Engineer

We have an opening in our Surety Department for a young (30 or under) college graduate Civil Engineer to be trained in the underwriting of contract bonds. Construction rather than design experience is essential. Since the position involves calling on contractors, public officials and insurance agents, the ability to meet people and create a favorable impression is highly important. A varied construction background is also desirable. Good health is a prerequisite. The position is permanent and affords an excellent opportunity for advancement. Please write, giving complete details on education, previous experience, marital status, and salary requirements. If possible, enclose a small photograph of yourself. All replies will be treated as strictly confidential. Address your reply to:

Personnel Department
ÆTNA LIFE AFFILIATED COMPANIES
151 Farmington Avenue
Hartford 15, Connecticut

Chief Civil Engineer WANTED

An excellent opportunity in an established west coast engineering firm for an exceptionally well qualified Graduate Civil Engineer, capable of taking charge of a Civil Department. Must possess comprehensive design experience and thorough knowledge of grading, drainage, roads, railroads, and utility layouts for municipalities.
In addition, applicant must have ability to discuss and develop prospective work with municipal, county and state authorities.
Submit photo with experience record covering above requirements in detail. Replies confidential.

P-1251, Engineering News-Record
621 S. Hope Street, Los Angeles, Calif.

POSITIONS VACANT
(Continued from page 89)

MECHANICAL SUPERINTENDENT — Qualified to supervise installation of plumbing, heating and power plant jobs running over one million dollars, also mechanical equipment and piping installations in Sewage disposal and water treatment plants. Mechanical engineering graduate with some office experience in estimating preferable, but not essential. Permanent position for properly qualified man with salary and bonus in line with qualifications and results, submit experience record and educational background for review and if interesting to us, personal interview at our expense will be arranged. Reply immediately to Virginia Engineering Co., Inc., Newport News, Virginia, Attention: A. N. Miller.

WRITER WHO is construction engineer wanted for two years work in South America. Should have technical editorial experience similar to ENR and real knowledge of current construction methods and equipment. Write fully stating experience, family status, date available and salary required. Our staff knows of this ad. P-1398, Engineering News-Record.

DESIGNERS-DRAFTSMEN: Structural, Mechanical, Electrical, Public Works including water and sewer. Send full record showing duties, salaries, etc. P. O. Box 2192, Atlanta 1, Ga.

WANTED: AN Engineer with several years experience, particularly in design of water and sewage treatment plants, for location in Dallas, Texas. Include qualifications, picture, salary requirements, and date available. All replies confidential. P-1405, Engineering News-Record.

ESTIMATOR AND Manager—interested in giving services and material investment in return for share of established firm. P-1419, Engineering News-Record.

POSITIONS WANTED

BUILDING CONSTRUCTION: Thirty years experience covering estimating, office management and general supervising, all types of buildings. PW-1204, Engineering News-Record.

MECHANICAL ENGINEER: 8 years chemical plant design and process engineering. 10 years diversified, maintenance, machine design and supervisory experience. PW-1311, Engineering News-Record.

CONSTRUCTION PROBLEMS — difficulties, unusual conditions, analyzed, solved, dams, tunnels, concrete structures, methods, estimates, quick action. PW-1334, Engineering News-Record.

CIVIL ENGINEER, 12 years experience administrative and design. Specialized in general construction and airport design and field work. Desires contacts for airport design work. Specialty work considered on quotation basis. Work history furnished upon request. PW-1340, Engineering News-Record.

SALES EXECUTIVE: Reliable Phila. Business man 50. Now employed regional manager national company. Broad sales, management and contact experience. Bondable, highest references. Excellent business and political connections Penna., New York, and New Jersey. Interested in permanent profitable connection only with well established company. PW-1348, Engineering News-Record.

CIVIL ENGINEER — Executive. Registered P.E., N.Y. Thirty five years broad experience, about twenty of which in responsible charge field and office on highways, municipal and general construction in Latin American and Far East. Fluent Spanish. Excellent credentials. Available for foreign assignment. Write or wire Thuman, P. O. Box 126, Merritt Island, Fla.

MECHANICAL SUPERINTENDENT: Who can handle all mechanical departments of a large construction job. PW-1383, Engineering News-Record.

STRUCTURAL ENGINEER, graduate, registered, 25 years design and construction subways, buildings, docks, foundations, statically indeterminate structures, etc. desires permanent responsible position. Will go anywhere. PW-1375, Engineering News-Record.

FIELD SUPERINTENDENT: Twenty-five years experience, excavating, earth filled dams, levees, coal stripping operations. Familiar with all types heavy equipment, maintenance and operations. PW-1412, Engineering News-Record.

ENGINEERING EXECUTIVE 35 years experience Architectural and Contractural field from planning to completion on industrial, bank, hotel, hospital, office, church and housing projects. Available Jan. 1st. PW-1403, Engineering News-Record.

ATTENTION CONTRACTORS. Project manager or General Superintendent Graduate Engineer, registered, desires connection. Closing out large project east coast, available Nov. 20. Bridges, dams, tunnels, public and industrial bldg., oil refineries, heavy foundations, cofferdams, labor relation expert, free to travel, States—So. America. Resume of experience as well as references. Young energetic, best of health, salary open. PW-1396, Engineering News-Record.

POSITIONS WANTED

RECENT C.E. Graduate B.S. Lehigh, M.S.C.E. (Harvard) Soil Mechanics, desires position in structural design or foundation engineering North East preferred. Available on two weeks notice. PW-1407, Engineering News-Record.

PART TIME WORK WANTED

REGULARLY EMPLOYED Professional Engineer seeks occasional structural design or steel detailing work for evenings, weekends. NYC area. PTWW-1404, Engineering News-Record.

FOR RENT

Philadelphia (Suburban)

3 B.R. unfurnished Ranch type. $125.00 Convenient. Lease if desired. References. Reply FR-1408, Engineering News-Record.

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Plant in France.

To be sold, because removal, well fitted Plant in France, easily accessible, located in the industrial heart of the upper-Alsace Valley. Covering more than 3000 square-yards. Convenient for all manufacturing. Offices, outbuildings. For further details write to Mr Hotz, notary at Bergheim (Haut-Rhin, France).

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FOR
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Waukesha Engine Parts
Hercules Engine Parts
Kohler Generator Parts
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Whiteman Cement Finisher Parts
NORTH JERSEY EQUIPMENT CO.
343 Elizabeth Avenue, Newark 8, N. J.
Tel. Bigelow 2-2323

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WANTED
(10) TD-9 ENGINES (10)
Complete, new or rebuilt for International Harvester Tractors Model TD-9
Also motor parts and tractor parts for Int. Har. tractors model TD-9, TD-14, TD-18
Parts for Buda Diesel Mdl. 6DH1611 D-2091 km b/m Ser. No. 10782
RAYMOND TOMASSI
3031 N. 16th St. Phila. 32, Pa.

LOW PRICED FOR QUICK SALE
NEW HOISTS
2—30hp Christian DD Gas Hoists with swingers
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10—60hp Lidgergood S D Gas hoists with Waukesha engines—capacity 6000 lbs @ 235 fpm
1—80hp American D D Diesel Derrick hoist w/swinger
1—125hp Christian D D Gas Derrick Hoist w/swinger
1—138hp Clyde 3 drum Derrick Hoist w/swinger
1—8'x10 Clyde 3 drum steam derrick hoist w/swinger with or without 150#ASME boiler
REBUILT HOISTS
3—Lambert 8'x10 DD steam hoists with or without boilers
1—Lambert 13x16 Hoist with side by side drums
1—Lambert 9x10 D D steam hoist—boiler type
1—Lambert 10"x12 3 drum steam bucket hoist
1—American 3 drum contractors hoist with 135hp Hercules gas engine
DERRICK
1—American All-Steel Stiffleg with 90' boom, 3 line Capacity 20 tons @ 58'; 13 tons @ 88'
COMPRESSORS, NEW AND USED
2—315' Schramm Diesel on pneumatics or steel
2—210' Schramm Gasoline on pneumatics or steel
1—105' Schramm gasoline on steel wheels
1—420' Electric Schramm with 100hp motor
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INTERNATIONAL HOIST & MACHINE COMPANY
Office—556 Ferry St., Newark 5, N. J.
Phone Mitchell 2-4273
Plant—61 Esther St.

USED PIPE AND TUBING
(Available Immediate Delivery)
8,950'—2" O.D., .120-.150 wall, 2.67# Av., SS Tubing P.E., 13-15' RL
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11,000'—4½" O.D., 10.88# Std. Laps., T&C, 20' RL
2,950'—6" O.D., 16.81# SS, A-53, P.E., 20-50' RL
650'—8⅝" O.D., 43.39# XS Laps., P.E., 20' RL
440'—20" O.D., 86# Av., EW, P.E., 9-12' RL
Location: Oklahoma City Warehouse
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Ph. 2-9128 Tulsa, Okla.

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16" Diesel Elec. Hyd. Dredge
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1—Case LAI Tractor Lessman Loader
1—½ yd. Lorain TL20 Shovel, Diesel Engine
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1—30 McMyler Steam Locomotive Crane
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1—Mixermobile 1 yd. with Tower NEW Bros Dozers for D4-D6 New
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1—1⅞ yd. P & H Shovel, Diesel Engine, BARGAIN
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19930 Detroit Road • Call EDison 1010 • Rocky River 16, Ohio
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LIFTING BLOCKS

UNUSED

50—4 sheave 18" blocks, forked shackle, steel galvanized sheaves, wt. 740 lbs. original cost $460.00 each. **$48.00 each**

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We have about 20 Fords and Brockways. They were formerly used by the New England Tel. & Tel. Co., and are in extra good condition as shown in picture.

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$12,000 . . .

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Model 703 1¾ cu. yd.

Cat. D13000 engine, boom 50 ft.; Manufactured 1943, slightly used, perfect operating condition.

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20 KW—3 PHASE—60 CYCLE

NEW

WAUKESHA 6 CYLINDER GASOLINE ENGINE

ELECTRIC MACHINERY CO. GENERATOR

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Price . . . each $1,449.00

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Tractors, Graders, Scrapers, Shovels, Cranes, Trench Diggers, etc.

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Cutting Edges All Sizes—Fairleads

CEMENT MIXERS
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Excellent Condition

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Trenchers: Buckeye 120, 160, 201, 203, 224; Parsons 25, 250, 31, 310; Austin 160.
Whirley gantry crane, electric, 120' boom.
Shovels-Draglines-Cranes, ⅝ to 10-yd. (9)
Locomotives: diesel, gas, 7 to 35 tons.
Porter, Vulcan 18-ton steam locos., 36" ga.
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Factory-new NORTHWEST 20 tons MOTO Truck Crane, also with backhoe
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New Guaranteed . . . 60 TON
HYDRAULIC JACKS
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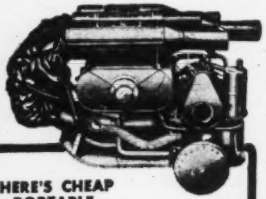

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Enclose check or money order or send ⅓ deposit, balance C.O.D. with privilege of examination.

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$195.00

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Clev. Model 95 & 110 wheel type.
Buckeye Model C-15 & C-22A.
Parsons Model 310 diesel—52' W. & 16' D.
P & H Model 10-30 digs 32' W. 12' D.
Clev. combination Backfill Tamper.

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Lorain L 820 shovel, almost new.
Buckeye Clipper Shovel ¾ yd. bargain.
Osgood Model 200 crane 1½ yd. $5,200.00.
Marion 362 Sh. & D.L. diesel, bargain.

TRACTORS

Cat. D-8 & D-7 Latest series.
Cat. D-4 front end loader & dozers.
Int. TD-14 & 9 like new with dozers.

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Garwood & Bucyrus Erie Scrapers 15 yds. 12 yds.
Cat. 212 Motor Patrol—Warco Motor Patrol.
15 Air Compressors, all sizes.
40—Buckets, clam & drag new or used ½ to 3 yds.
We will use the Barter System, trade most any machine we offer for some others you may not need. Let's try it.

AIR COMPRESSOR RENTAL CO.

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NEW PIPE and TUBING

(Available Immediate Delivery)

16,200'—1.073" O.D.,1.6# SS Tubing P.E., 10' RL
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STEEL TUNNEL LINER PLATES

Size ⅛" x 16" x 37 11/16"
Enough for 400 ft. at 6 ft. dia.
Will sacrifice for immediate disposal.
Notify

Intercounty Construction Corporation
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LORAIN 80 Diesel 1¾ cy
LORAIN 179 Diesel 1½ cy
both completely rebuilt, excellent condition
FOR RENT OR SALE

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New Bucyrus-Erie 200-W diesel dragline

125' Boom, 6 yd. Bucket, 390 H.P. Engine
Never used, immediately available, central location. Address
FS-1049, Engineering News-Record
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FOR SALE

9-W Bucyrus-Erie Electric Dragline

200' boom, 8 yard bucket, individually driven, regenerative drum sets. Machine like new. Pennsylvania location.

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l Bk. Bldg. Hazleton, Pa.
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CONCRETE PLANT

1—Complete Concrete Mixer Plant, including 2—model 28-S mixers, (less than 18 months service), with 25 HP, 440 Volt Motors, Blaw-Knox 1¾ yd. weigh batcher and 105 ton 2 compartment aggregate bin, 300 Bbl cement bin, cement elevator and track unloading equipment, heavy (26 tons) structural steel superstructure. The assembled plant is 25 ft. by 30 ft., overall, and the top of the cement elevator is 60 ft. high.

This plant is located at Willow Island Station, six miles south of St. Marys, West Virginia, on West Virginia State Route #2. Photographs and erection drawings are available.

Write for price and further particulars.

MONONGAHELA POWER COMPANY
Attention: W. P. Roberts
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FOR SALE

LOCOMOTIVE CRANE

Practically New

Ohio Standard Model "F", 30 Ton Capacity with 50' Boom; Extra 20' Insert. 8 Wheel Type with Enclosed Steel Cab. Diesel-Driven, Powered with 6 Cyl. Caterpillar Type D-13000, 145 HP Engine, Westinghouse Air Brakes.

Machine Located Northern Virginia Power Co., Riverton Power Station, Near Riverton, Va.

Write Or Phone For Particulars—

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4—Model **60FD EUCLID** 15-Ton Quarry Type Trucks, General Motors engines, 16:00x24 tires. Price each **$13,500.00**

5—Model **36FD EUCLID** Rear Dump Trucks, Cummins diesel engines, 14:00x24 tires. Price each **$11,000.00**

Above units in first-class condition.

THE W. I. CLARK CO.
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FOR SALE

1—1½ Cu. Yd. Amsco Shovel bucket, new, complete with teeth and sheave for P & H Shovel. Price $1450.00

Phone Williams 1-8600
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Sale: New—Will Sacrifice

1—F-55 Syntron Elec. Vibratory Feeder with FC Controller, 36" x 78" Flat Pan Trough, ¼" flat bottom and 1" sides flared with ½" rise to the inch. 440 volt—60 cycle.

Call or write

GILBERTON COAL CO.
or phone Frackville, Pa. 602
Gilberton, Pa.

FOR SALE:

Bucyrus-Erie 200-B electric shovel, mounted on caterpillars; 10 cu. yd. bucket; shovel in excellent condition; has been used loading coal in strip mine. Reason for sale, we have installed 17 cu. yd. Bucyrus-Erie 550-B. Specifications and photographs sent on request.

NORTHWESTERN IMPROVEMENT CO.
Colstrip, Montana

Following Attachments—Near New

¾ YD. SHOVEL FRONT
¾ YD. DRAGLINE BKT.
FAIRLEADS

Above for ¾ Yd. Buckeye Machine $1,000.00 for all

NESBITT EQUIPMENT COMPANY
P. O. Box 11 Alexandria, Virginia

FOR SALE

TUNNEL SUPPORTS

(Commercial Shearing & Stamping Co.)

12' 6" diam. Tunnel. 60 Courses 5" I

10 lbs. per ft. 4 Segments per Course

Splice plates included also

2 Eimco, Model 21 Muckers, 30" and 36" gauge

Nicholas DiMenna & Sons, Inc.

1525 Blondell Avenue, New York 61, N. Y.

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For Sale at a Bargain Price

2—D8 Tractors 8R Series

1—D7 Tractor 7M Series

1—D8 Tractor 1H Series

All in good working condition, equipped with LeTourneau equipment.

1—Lima Model 750, 1¾ yd. diesel, air control, excellent condition.

1—Osgood Model 800, 1½ yd. diesel, air control, excellent condition.

TUCKAHOE CONSTRUCTION CO.

116 Columbus Avenue, Tuckahoe 7, N. Y.

Caterpillar Diesel Engines

Model D-13,000 and D-8800

Complete - Very few hours

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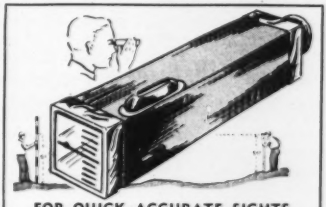

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Preformed "Blue Center" Wire Rope . . . smoother operation — longer life

TWO THINGS reduce wire rope costs . . . *longer service life . . . smoother performance on the job.* You get both with Roebling Preformed "Blue Center" Steel Wire Rope, and for special reasons. One reason is that "Blue Center" Steel was developed to give wire rope *extra* measures of strength and durability . . . and only Roebling makes "Blue Center" Steel. Another reason is the Roebling Preformed construction with its unsurpassed merits, both in handling and in operation. A third reason is the Roebling "know-how" in the manufacture of wire rope.

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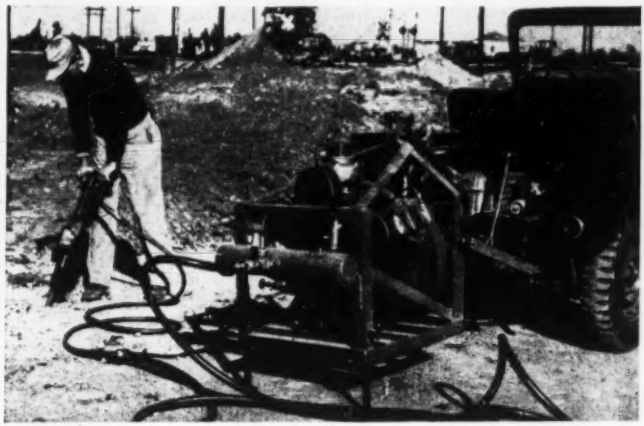
NEW PRODUCTS



Jeep-Mounted Compressor Is Raised, Lowered by Hydraulic Lift

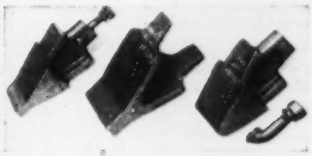
Portable air compressor unit consists of a 60-cu. ft. Ingersoll-Rand air compressor mounted on a Willys Jeep equipped with a hydraulic lift. Mounted at the rear of the vehicle, the compressor is driven from the Jeep's engine through a power take-off. Hydraulic lift simplifies lowering compressor into position or detaching it completely, cleasing the Jeep for use with other equipment. Capacity of compressor permits driving all types of utility air tools. Unit has been engineered by—Monroe Auto Equipment Co., 1400 E. 1st St., Monroe, Mich.

Hydraulic Rock Breaker

Duncan Roc-Jak performs a quick and economical job in the demolition of rock, mass concrete, or cemented brick where the use of explosives or ball drop is prohibited or impractical. The Roc-Jak is 24-in. long, 3 in. in diameter, and contains 10 machined piston openings. The pistons are tested to withstand 15,000 psi. The hydraulic pump has a capacity of 15,000 psi., and is equipped with 6 ft. of high-pressure hose. Roc-Jak develops a pressure of over 150 tons in the hole causing a clean, shearing break at right angles to the point of thrust. Material may be broken in any size depending on the burden placed on the hole and the direction of applied thrust. Unit with hose and pump weighs approximately 90 lb.—Duncan Hydraulic Roc-Jak Co., 1350 Wright St., Los Angeles 15, Calif.

Rubber Coupling Joint

Pre-assembled rubber coupling joint gives multiple rubber sealing, is full floating and cushioned, and flexible in angular and lengthwise movement. The Tylox coupling joints are self-locking and leak proof for the life of the line. Other features include self-centering spigot and bell, prevention of pipe failure even when considerable pipe separation is caused by contraction and ground movement, and they match vitrified clay pipe in resistance to acids, alkalis, and waste material action.—Universal Sewer Pipe Corp., 1500 Union Commerce Bldg., Cleveland 14, Ohio.



Bucket Tooth Points

Manganese cast-steel tooth points for shovel and dragline buckets are available in two types—with solid point and with weld-on tip with separate base. The points work in sand, clay, rock or shale, and, depending upon the type of material being dug, can be reversed from four to six times. It maintains a cutting edge at all times. —Baker Point Co., 7238 Ridge Ave., Chicago 45, Ill.

Hydraulic Rod Cutter

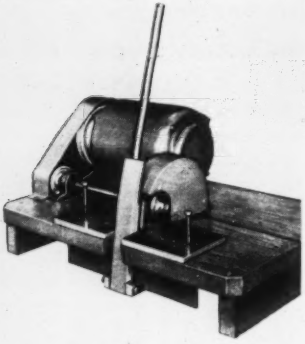
Portable cutting tool develops up to 22½ tons thrust to cut through ¾-in. reinforcing rod or 1-in. mild-steel rod. The Manco Guillotine can also be equipped with a shear-type blade for cutting wire rope up to 1¼-in. in diameter and up to ¾-in. mild-steel rod. Guillotine can be adapted for crimping, swedging, and bending operations on large-diameter material. Operated by hand pumping, this hydraulic tool weighs 40 lb. Safety relief valve prevents damage due to overloading.—Manco Mfg. Co., Bradley, Ill.

Hard-Surfacing Alloys

Three new hard-surfacing alloys are available in cast-rod form. Victorite is recommended for use on equipment subjected to abrasion or sliding friction and not subjected to severe im-

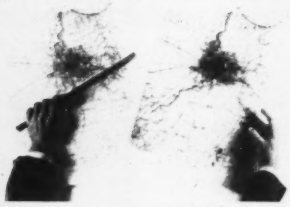
(Continued on next page)

pact. Melting point is 2,420-deg. F.; tensile strength, 56,000 psi.; specific gravity, 7.7; Deposits of Victorite average 56 to 60 Rockwell C. It is available in bare or coated, in sizes from ⅛ to ¾ in. Victor HS-1 is recommended to resist corrosion, heat and attrition at either low or elevated temperatures. It has a 58 to 60 Rockwell C hardness, a 47,000 psi. tensile strength, melting point of 2,230-deg. F., and a negligible elongation. Available bare or coated in sizes from ⅛ to ¾ in. Victor HS-6 is recommended for use where corrosion and elevated temperatures are important factors and where impact is involved. It has a Rockwell C hardness of 45 to 47, a tensile strength of 105,000 psi, a melting point of 2,295-deg. F., and an approximate elongation of 2 percent. Available bare or coated in sizes from ⅛ to ¾ in.—Victor Equipment Co., 844 Folsom St., San Francisco 7, Calif.



Hose Cut-Off Machine

Cuts all types of flexible hose up to 3-in. in outside diameter. Sturdily constructed, compact, and planned to occupy a minimum of space, the machine cuts at 90 degrees to the axis of the hose. Unit can be easily mounted on work bench, or transported to various job locations. — Aeroquip Corp., Jackson, Mich.



Direct-Positive Photo Film

The Kodagraph Autopositive Film can be used for reproducing engineering and architectural drawings, maps of physical surveys, and similar applications. It can be handled in normal room light and produces a positive copy directly from the original without a negative step. Exposure can be on any equipment used for making blueprints or other copying machines. The film is highly translucent and has a matte surface on both sides, permitting additions or corrections in either ink or pencil. Available now in 30 and 100-ft. rolls in 24, 30, 36, 42, and 44-in. widths.—Eastman Kodak Co., 343 State St., Rochester 4, N. Y.

Aluminum-Backed Insulation

Mineral-wool insulation is now provided with a backing of pure aluminum foil. This foil is said to stop 95 percent of all heat transmission by means of radiation; the rock wool stopping conduction and convection. Seal-Foil is manufactured in a medium thickness of approximately 2½ in. — Sealtite Insulation Mfg. Corp., 115 Madison St., Waukesha, Wis.

Corrugated Expansion Joints

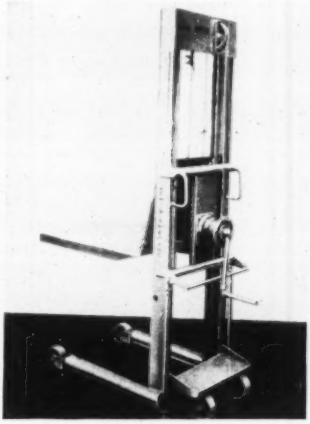
The CMH joints are specifically designed to absorb vibration and expansion strains, as well as to provide positive control of pipe expansion. Sizes from 4 to 24-in. inside diameters are available in copper and stainless steel; either free-flexing for low to moderate pressure, or controlled flexing for medium to high pressures.—Chicago Metal Hose Corp., Maywood, Ill.

Chart Speeds Multiplication

Pre-multiplied tables provide exact answers to multiplication problems involving figures with as many as eight digits. These tables are designed so that each problem is reduced to copying a series of numbers from the chart and then adding them together. Answers are exact with no need for interpolation or estimating the distance between marks on a scale. Chart measures 7x11½ and is enclosed in plastic which is quickly cleaned and which provides life-time use of the chart.—Disbursing Agent's Computing Co., Inc., 25 Broadway, New York, N. Y.

Dual-Fuel Diesels

Greater efficiency and smoother operation over a wide load range are provided by the new dual plunger fuel pump and automatic thermal air control which are standard equipment on Worthington dual-fuel diesel engines. The dual plunger fuel pump incorporates in one unit the requirements for a pump to handle the full load of the engine on oil operation, and at the same time provides the most effective method of handling the small quantity of pilot oil for burning the gas fuel. The automatic thermal air control provides the correct air/fuel ratio at all times, and in direct relation to load changes. — Worthington Pump & Machinery Corp., Harrison, N. J.



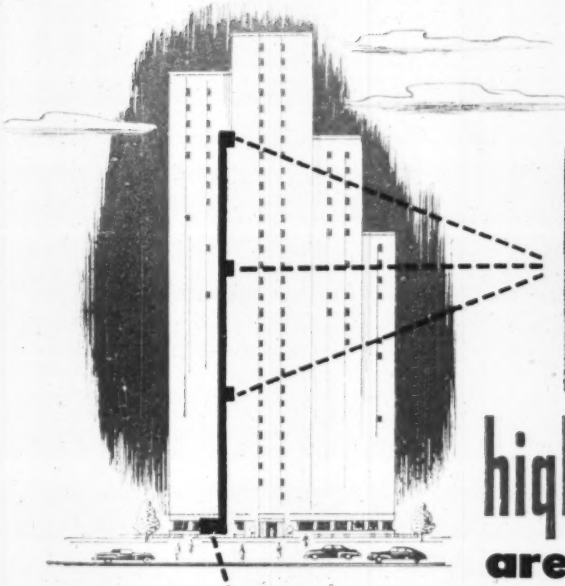
Utility Hoisting Platform

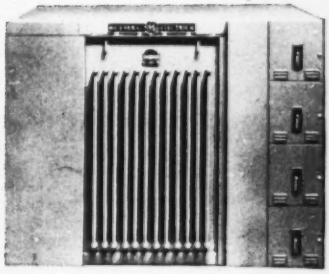
Hoisting unit, equipped with a 24x30-in. platform, has a capacity of 1,000 lb. Lowered height is 66 in.; extended height, 76 in. The L-S unit will lift loads to a height of 58 inches. Roller bearings and caster-steer wheels assure maneuverability in confined areas. Crank handle can be swung out of position when not in use.—Lewis-Shepard Products, Inc., 266 Walnut St., Watertown 72, Mass.

Panels from Wood Waste

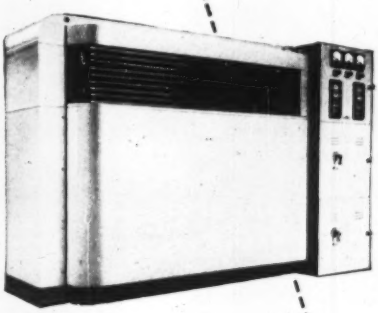
Plywood panels are formed by bonding saw dust, lumber rejects, and shavings with a phenolic resin. The result is a panel board which can be used for concrete forms, interior or exterior doors and walls, and similar uses. Resinwood has a hard smooth surface with a color similar to that of natural pine. It can be drilled, nailed, sanded or subjected to other process, similar

(Continued on page 98)





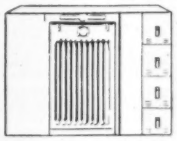
high-voltage runs are low-cost runs



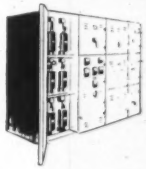
Load-center distribution keeps uneconomical low-voltage cable short, power loss low, voltage regulation high—In fact, here's a power-distribution idea that may bring you almost unbelievable savings in first cost, and at the same time make your system more flexible and expansible. Power is distributed at relatively high voltage to unit substations located *near the load centers.* There it is stepped down to utilization voltage and distributed to the loads via short feeders.

Keeping high-loss secondary feeders *short* means less loss in feeders, better regulation at the load. Having several distribution points in the system (instead of only one at the service entrance) isolates faults, increases service continuity. These are only a few of the advantages of load-center distribution; your nearest G-E sales office will have an application engineer tell you the rest and help you plan your entire distribution system. Call today, or write for **Bulletin GEA-3758, "Load-center Power Distribution."** *Apparatus Dept., General Electric Company, Schenectady, N. Y.*

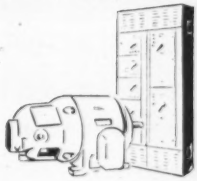
EQUIPMENT FOR COMMERCIAL BUILDING



Power-distribution Systems



Rectifiers for Power Conversion

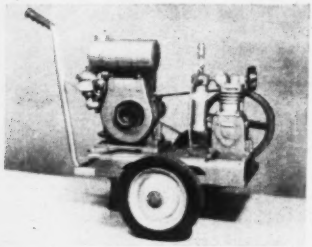


Motors and Control

GENERAL ELECTRIC

665-104

to natural wood. It will take a stain or varnish satisfactorily, and paint will adhere to it without checking or becoming discolored. — Rock Island Millwork Co., Rock Island, Ill.

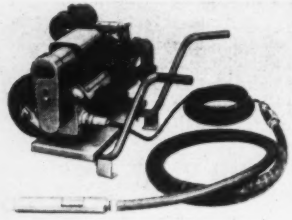


Portable Air Compressors

Two working pressures and two air deliveries are possible with two new dual-pressure portable air compressors. Model B-140-DS is powered by a ½-hp. electric motor; the Model G-140-DS, by a ¾-hp. gasoline engine. Both models operate at 150-lb. pressure delivering 2.4 cfm. of free air. Shifting a lever, converts compressor to a continuous-running unit at 50-lb.-pressure delivering 3.2 cfm. of free air.—Kellogg Division, American Brake Shoe Co., 230 Park Ave., New York 17, N. Y.

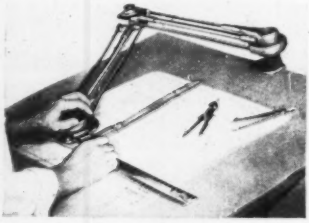
Grouser Re-Treaders

Strips of special carbon-manganese steel are quickly welded to worn grouser treads, extending the life of the tread and increasing tractor efficiency. The Tractor-Strip is applied by welding with high-grade all-purpose steel electrode. — Marquette Mfg., Inc., 307 N.E. Hennepin Ave., Minneapolis 14, Minn.



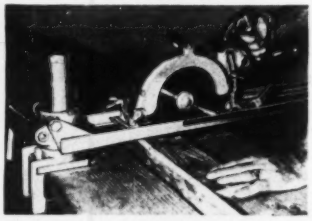
Concrete Vibrator

Illustration shows an HCV-3 Hi-lectric vibrator connected to an HGG-1 Hi-lectric gasoline-engine-driven generator by means of a Hi-lectric line cable. The vibrator has a 180-cycle motor in the head, weighs 12 lb., and has a 2⅜-in. dia. The generator can be used to operate 2 vibrators simultaneously; 1 vibrator and 1,000 watts of 110-volt floodlights; or 2,500 watts of floodlights. It weighs 300 lb. The line cable can be up to 200 ft. in length permitting the generator to be located out-of-the-way of pouring operations.—Maginniss Power Tool Co., P. O. Box 28, Mansfield, Ohio.



Drafting Machine

The Vemco Versatilt features a spring counterpoise and a new indexing mechanism. The counterpoise is attached to the support bracket and permits the Versatilt to function smoothly on a board tilted from 0 to 20 deg. The indexing mechanism, for setting off 15-deg. positions, affords a secure grip for setting the machine. Vertical movement of the thumb release disengages the mechanism for setting angles other than multiples of 15 deg.—V. & E. Mfg. Co., 758 S. Fair Oaks Ave., Pasadena 20, Calif.



Guide Arm for Portable Saws

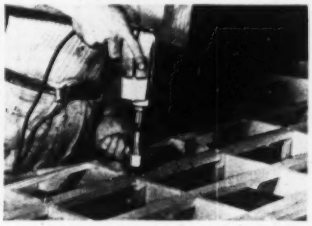
Quickly converts any portable electric saw into a precision radial arm saw. The Capehart Saw Gide can be set up wherever two saw horses (or similar trestles) are available. Specifications are: Maximum travel of saw, 21 inches; angle of cut, up to 180 deg.; and net weight, 26 lb. Permits saw to make all types of cuts—cross cuts, bevel cross cuts, mitres, bevel mitres, rip, bevel rip, dado, rabbets, etc.—Packard Mfg. Corp., Noble at Market, Indianapolis 2, Ind.

Magnetic Separators

Redesign has resulted in 50-percent increase in magnetic strength and a 30-percent decrease in weight. The Eriez magnetic separators serve to remove tramp iron from materials traveling in chutes and spouts or in pneumatic lines. Sizes range from 4 to 72 in., in increments of 2-in.—Eriez Mfg. Co., 1072 E. 12th St., Erie, Pa.

Rotary-Gear Pumps

Hydraulic pump delivers 5 gpm. at 1,000 psi. to meet specific flow and pressure requirements of tractors, trucks, construction tools, and other heavy-duty hydraulic applications. Can deliver intermittent pressure of 1,500 psi. Mechanical shaft seal incorporates an air-check device that prevents entrance of air during self-priming starts, eliminating hazard of entrained air in the oil system. Ports are tapped for standard pipe threads—¼-in. NPT inlet and ⅜-in. NPT outlet—Lear, Inc., Romec Division, Elyria, Ohio.



Screw-Driver Attachment

Designed for use with any electric drill, the Bull Driver automatically centers on the screw groove. An automatic release causes the driver to disengage itself when the screw is firmly set. Bull Driver is available in three models—a self-centering unit for driving screws up to No. 14 size; a self-centering model for driving small screws; and a hand-centering model.—R. B. Bertrom Co., 3121 Main St., Kansas City, Mo.

Nylon Safety Strap

Safety strap made of nylon is strong, durable, and flexible. It is made from multiple plies of nylon woven from high-tensile fibers laid together in neoprene. This results in a strap which is pliable, easy to handle, and light in weight. The strap is resistant to abrasion and is said to retain its flexibility. —Buckingham Mfg. Co., Inc., Binghamton, N. Y.

Correction

The November 10 issue of ENR states that sole distributorship of the Sicard line of Snow Master rotary plows has been granted to the Austin-Western Co. of Aurora, Ill. This should read: Sole distributorship of the plow, *when used as a grader attachment*, has been granted to Austin-Western.

"Here's one case where wire rope care paid off big!"

"Usually when I show up on the job, I hear all the 'gripes' about wire rope but today it was different. This contractor got rid of the bugaboo of early rope breakage and saved himself thousands of dollars. He was feeling so good, he even slipped me a cigar.

"He's done everything in his power to minimize wear and breakage of wire rope by keeping the condition of his equipment right up to 'snuff'. And he's got the best bunch of shovel runners you ever saw. They certainly know how to handle these machines without abusing the rope.

"But that's not all. Last year they switched to Tiger Brand Excellay Preformed Ropes and they've been getting better service than ever before. You can see that with 25 trucks on the job, any work stoppage–even for half a day–would cost them real 'dough'."

How proper wire rope application saves you money

There is always one best type of wire rope for every application and the TIGER BRAND Wire Rope Specialist can help you select the right ropes for your particular needs. He'll check your equipment, keep you posted on proper rope care, and a dozen other things to assure long service life at low unit cost.

To help you maintain these operating standards, we have prepared a booklet entitled, "Valuable Facts about the use and care of Wire Rope." Every key man on your operating staff should be supplied with this much needed information. Send the handy coupon for your copy.

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MANUFACTURERS' PUBLICATIONS

Drama of Portland Cement—Cement mills in operation as well as many notable concrete structures are shown in a 30-min. sound-and-color 16-mm. motion picture entitled "The Drama of Portland Cement". Every step in the making of portland cement, from quarrying or dredging raw material to the packing operation, is shown. The picture depicts the invention of portland cement by Joseph Aspdin; describes all the processes in cement making; shows how scientific research is used to improve the product; and shows the application of portland cement in building concrete highways and buildings. The film is available without cost.—Portland Cement Association, 33 W. Grand Ave., Chicago 10, Ill.

Wire Rope Sockets—Bulletin No. 1 sets the standard for wire rope sockets as compiled by the wire rope industry's engineers. The bulletin contains information on both open and closed sockets. Dimensions are provided for sockets for wire ropes from ¼ to 2¾-in. dia. Basis of design is the maximum stress in sockets not to exceed 48,000 psi. when rope used with them is stressed to listed catalog strength.—Wire Rope Institute, Shoreham Bldg., Washington 5, D. C.

Transmission Belting—New 28-p. catalog presents detailed design, engineering, and performance data for a line of transmission belting. Tables on belt speeds, arc of contact, friction, horsepower correction, and service factors are included in the manual, together with hints on the proper selection of a belt and the procedure for analyzing belt drives.—United States Rubber Co., Rockefeller Center, New York 20, N. Y.

Air Entraining Agent—Darex air-entraining agent, dispensers and air meters are the subject of a new 40-p. catalog. Among the items listed in this bulletin are fully and semi-automatic dispensers for central-mix concrete or batching plants; automatic and manually operated dispensers for pavers or mixers; semi-automatic and manually operated dispensers for portable job mixers; semi-automatic dispenser for Mixermobiles; semi-automatic dispensers for concrete-products plants; automatic supply tanks for dispensers; and pressure-type and rolling-method air meters. Each piece of equipment is illustrated, its principal features of construction are described, and its method of installation and operation is fully explained. If special equipment is needed for the use of a particular unit, this is also indicated. —In the West, Charles R. Watts & Co., 6th N. W., and Leary Way, Seattle, Wash.; in the East, Dewey & Almy Chemical Co., Cambridge 40, Mass.

Automatic Nuts; Rib Bolts—Four-page folder describes the Anco nuts and structural rib bolts. Used in combinations, the nut and rib bolts are recommended as a practical substitute for riveting. The folder contains complete technical information on the construction, physical properties, and handling of these Anco products. Tabulated data cover shear and bearing value of the structural rib bolts and standard dimensions and weights of bolts and Anco Nuts. The rib bolts are made in all the standard sizes.—Automatic Nut Co., Lebanon, Pa.

All-Vision Dust-Mask—One-page illustrated bulletin describes the MSA all-vision dust mask designed to provide complete facial and respiratory protection against nuisance and harmful dusts. Features described in the bulletin are: the lightweight all-rubber facepiece, the gas-tight face seal, adjustable head bands, and the filter and filter container. Bulletin CM-10 also describes the large, clear lenses which permit natural, wide-angle vision. Inner air deflectors in the mask protect the lenses from fogging.—Mine Safety Appliances Co., Braddock, Thomas and Mead Sts., Pittsburgh 8, Pa.

Anti-Rust Paint—Application bulletin describes Rustrem anti-rust paint, explaining how it can be applied directly over rusted areas without the need for wire brushing or scraping. Available in black or aluminum, Rustrem resists temperature changes, moisture, and gases, and is ideal for underwater or marine use. Bulletin lists features, applications, and prices. —Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio.

Reducing Tool-Crib Costs—Compilation of written reports indicates how the McCaskey tool-crib control system reduces costs of operation. This 12-p. booklet contains reports of typical savings encountered in various industries. Condensed for quick reading, it is illustrated with humorous cartoons.—McCaskey Register Co., Industrial Division, 101 W. 31st St., New York 1, N. Y.

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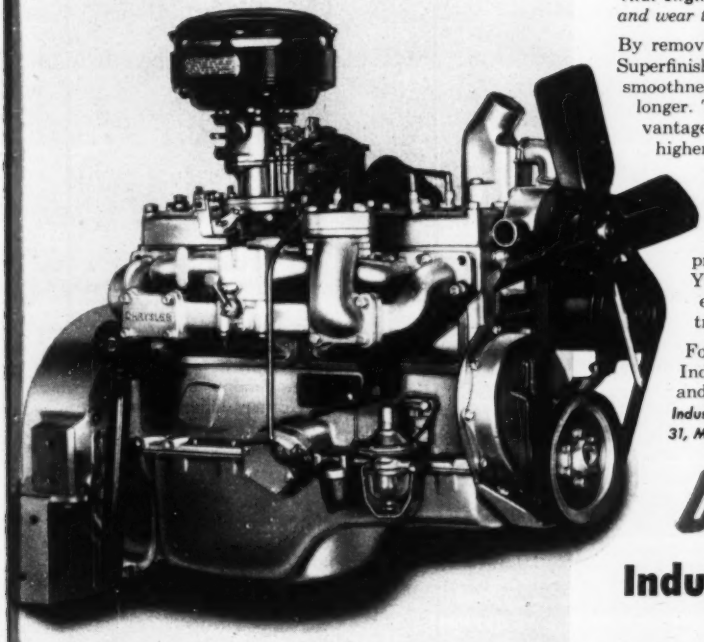

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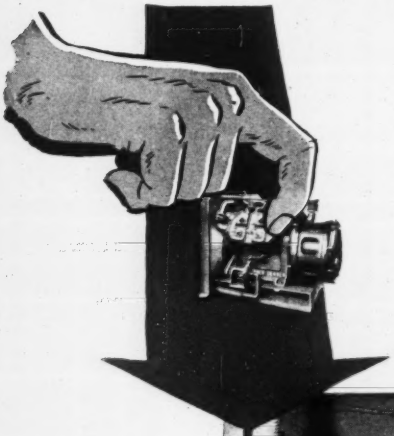

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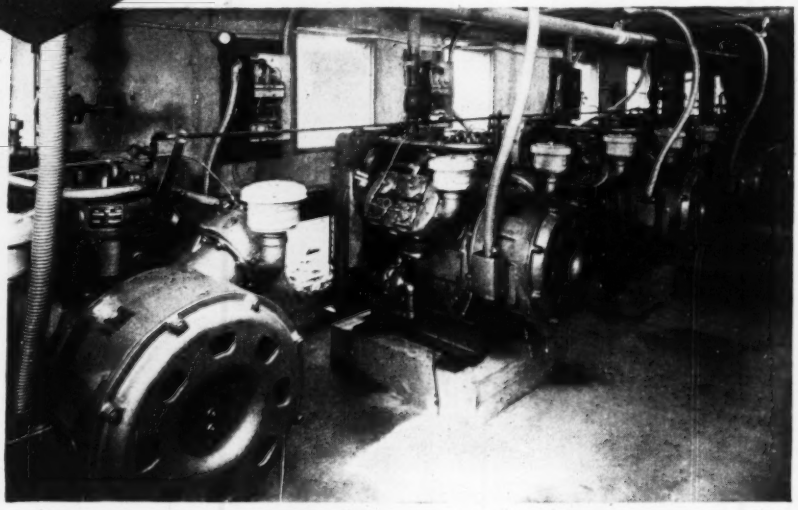

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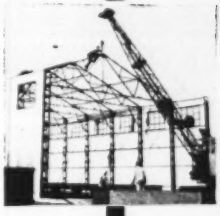

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READER COMMENT

Labor Dispute Mediation

Sir: My attention has just been called to the article (ENR Aug 25, 1949, p. 15) entitled "Heads-or-Tails Odds Beats Mediation." While this report is based on the findings of an unpublished study made by the Institute of Industrial Relations here, it is a summary that does a great injustice to representatives of the Federal Mediation and Conciliation Service as well as to the Institute of Industrial Relations.

The story which you ran misrepresents the facts in several crucial respects. I shall not endeavor to enumerate all of the distortions but should like to refer to two or three of them. First, the survey does not in any way state or indicate that the chances of getting an impartial mediator are only one out of eight. The study indicated that the test which was used might show tendencies on the part of mediators toward "pro-labor" and "pro-management" attitudes. Obviously, there would be a range in attitudes, with only a very small number of persons in the middle or "neutral" range of the attitude scale. Your report implies that only those mediators who have no "pro-labor" or "pro-management" leanings of any kind are impartial; the study did not state this, either expressly or by implication.

Your story claims that the chances of getting a "pro-labor" mediator are six times greater than the chances of getting a "pro-management" one. Actually, many of the mediators in the study skipped the "loaded" questions entirely, thereby influencing the make-up of a representative sample which is essential before the conclusions which you have indicated can be drawn. It is also important to realize that mediators, or people generally, cannot be placed in clear-cut categories, depending on their attitude toward labor and management problems or toward other economic and social issues.

Finally, you imply, but do not state, that answers to individual "loaded" questions can be used as an indication of bias. Again, the report expressly states that this is not the case.

Your readers might also like to know that the participants of the study included not only members of the Federal Mediation and Conciliation Service, but also professional mediators from various state agencies and individuals who performed mediation activities without affiliation with any governmental agency.

EDGAR L. WARREN
Director, Institute of Industrial Relations
University of California

EDITOR'S NOTE—The differences cited are not of fact, but of interpretation of the study results. We thought the "facts" indicated what we reported. Mr. Warren interprets them differently. He may be right.

Patent Applied For

We have been informed that the vibration system for testing wire tension in prestressed tanks (ENR Oct. 6, p. 33) was invented jointly by Courtney B. Harris and Frederick W. Viehe, and is covered by a patent application made by them.

Cut Safety Factors Slowly

Sir: The article "Let's Stop Overdesigning Structures", in the Sept. 1 issue is a notable step in civil engineering. It is to the advantage of the industry that we appraise the value of our safety factors and eliminate unnecessary materials from our structures.

The treatment given the subject by the author is excellent and desirable, but he does not indicate what scope of structures he includes. I doubt if he would attempt to formulate minimum, precise and rational factors of safety for the greatest bulk of ordinary structures. The article lends itself well to structural steel bridges and crane girders, planned and constructed by skilled builders. It does not lend itself, however, to the many complex and highly indeterminate structures of reinforced concrete, timber and masonry, such as industrial, commercial and multiple dwelling buildings planned and supervised by the average architect, engineer or contractor.

Eleven parties enter into decisions affecting safety: the professor, architect, structural engineer, specification writer, fabricator, shipper, contractor, laborer, inspector, owner and tenant. And at least eleven difficulties necessitate the factor of safety: inexact theories, inexact weights, unknown loads, faulty design, irregular materials, irregular fabrication, damage during shipment, faulty construction, substitution of materials, unexpected attachments and poor maintenance.

In addition to these variables, we have different educational curricula, licensing laws and law enforcement programs in various localities. Thus, there is ample reason to proceed slowly in reducing the margin of safety without regard to local conditions and class of construction.

FRANK A. RANDALL, JR.
Chicago, Ill.

Subaqueous Coral Blasting

Sir: I would like to substantiate the remarks made by Wm. H. Acheson (ENR Oct. 20, 1949, p. 44), with reference to coral blasting. He and I worked together in the Pacific on numerous subaqueous blasting jobs when I was diving officer with the 301st Naval Construction Battalion. We had very successful results on all of our blasting by the propagation method. We also found it was entirely unnecessary to weight charges either placed from a barge or placed by divers.

We found the most successful method of blasting coral heads was to bulldoze the bulk of the material to be excavated, excavate this material, then blow off the high spots by diver-placed charges. This speeded up dredging operations in all cases, as there were always several areas of very hard coral which seemed to escape damage during the heavy blasting.

T. D. VINETTE
Escanaba, Mich.

Geographical Errors

Sir: Your anniversary number of the ENGINEERING NEWS-RECORD, Sept. 1, 1949 is an excellent number; however, my students in civil engineering wish to call your attention to two errors.

On page A-9 you refer to the airbase hangars that are located in Rapid City, South Dakota—not Rapid City, South Carolina, and on page A-13, Angostura Dam is in South Dakota and not Wyoming.

EARL D. DAKE
Professor of Civil Engineering
South Dakota School of Mines and Technology
Rapid City, S. D.

Prestressed Concrete

Sir: Your editorial and the article on the Philadelphia prestressed bridge girders in the Nov. 3 issue lends impetus to continued interest and research on this new development. Many articles are being written on the subject. There is a handbook by Magnel and Abeles. A.C.I. committee 323 as well as a group in England and several in Europe are working on the idea. Keep it moving in the right direction.

MARTIN MAHLER
Consulting Engineer
Union, N. J.

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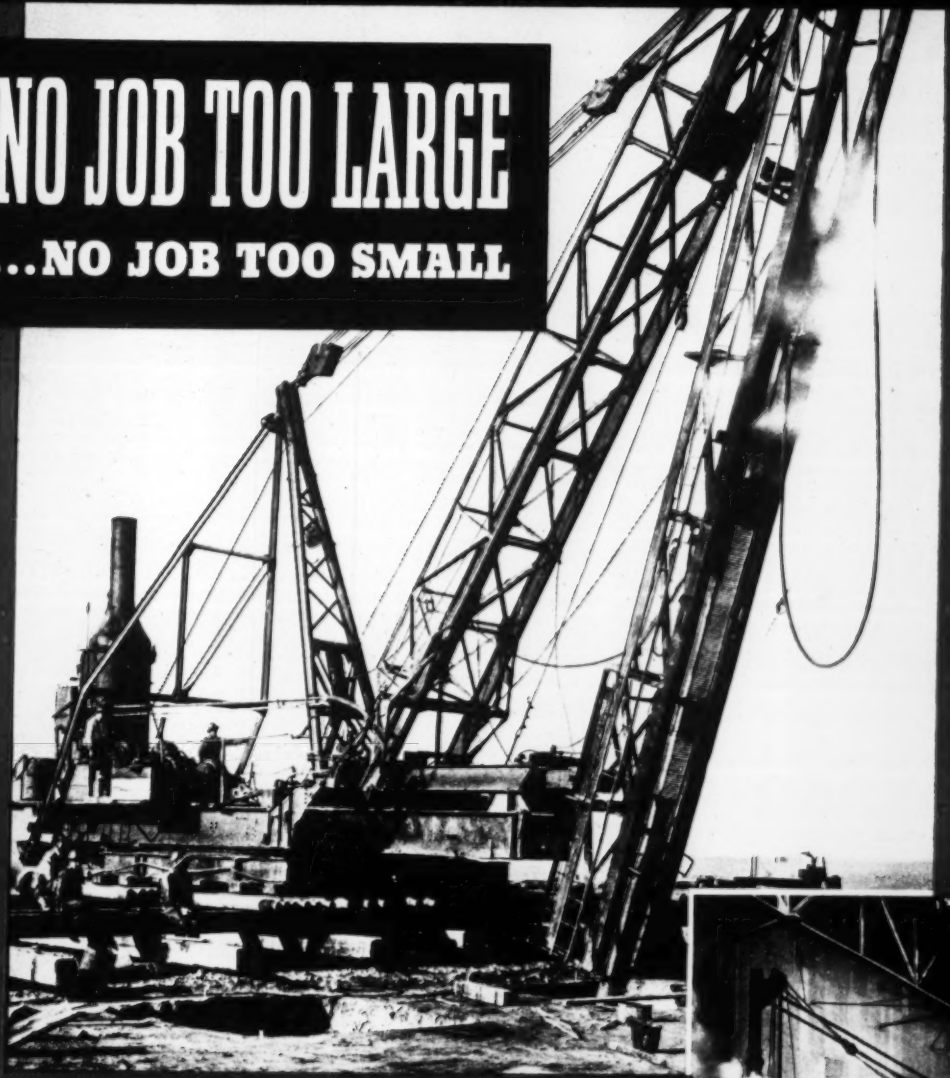

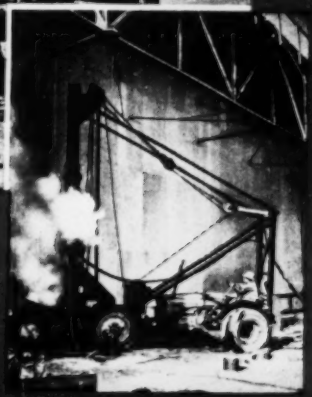

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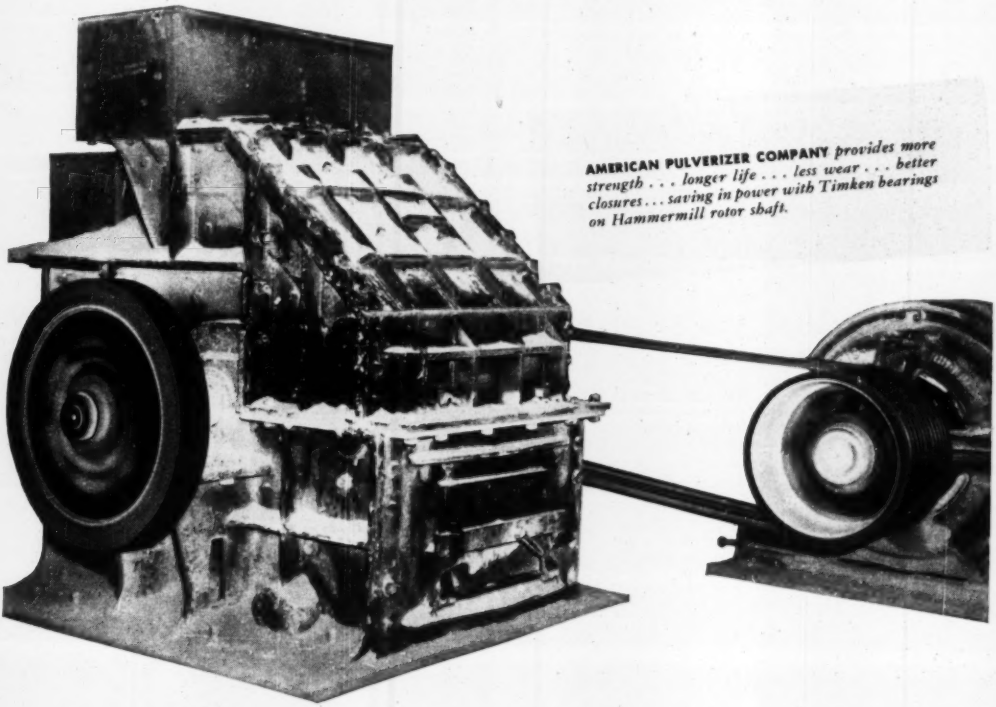

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